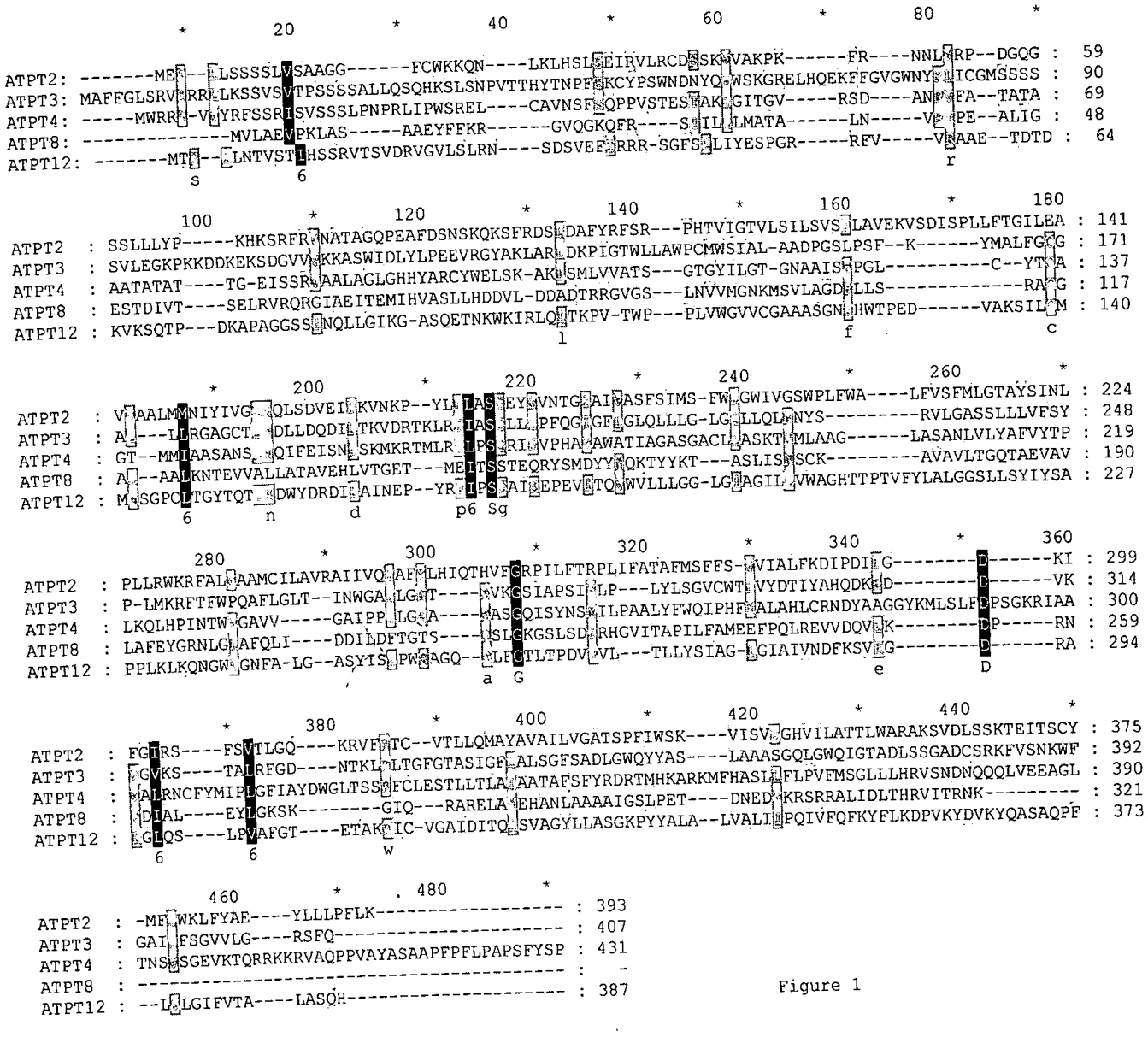


Figure 1

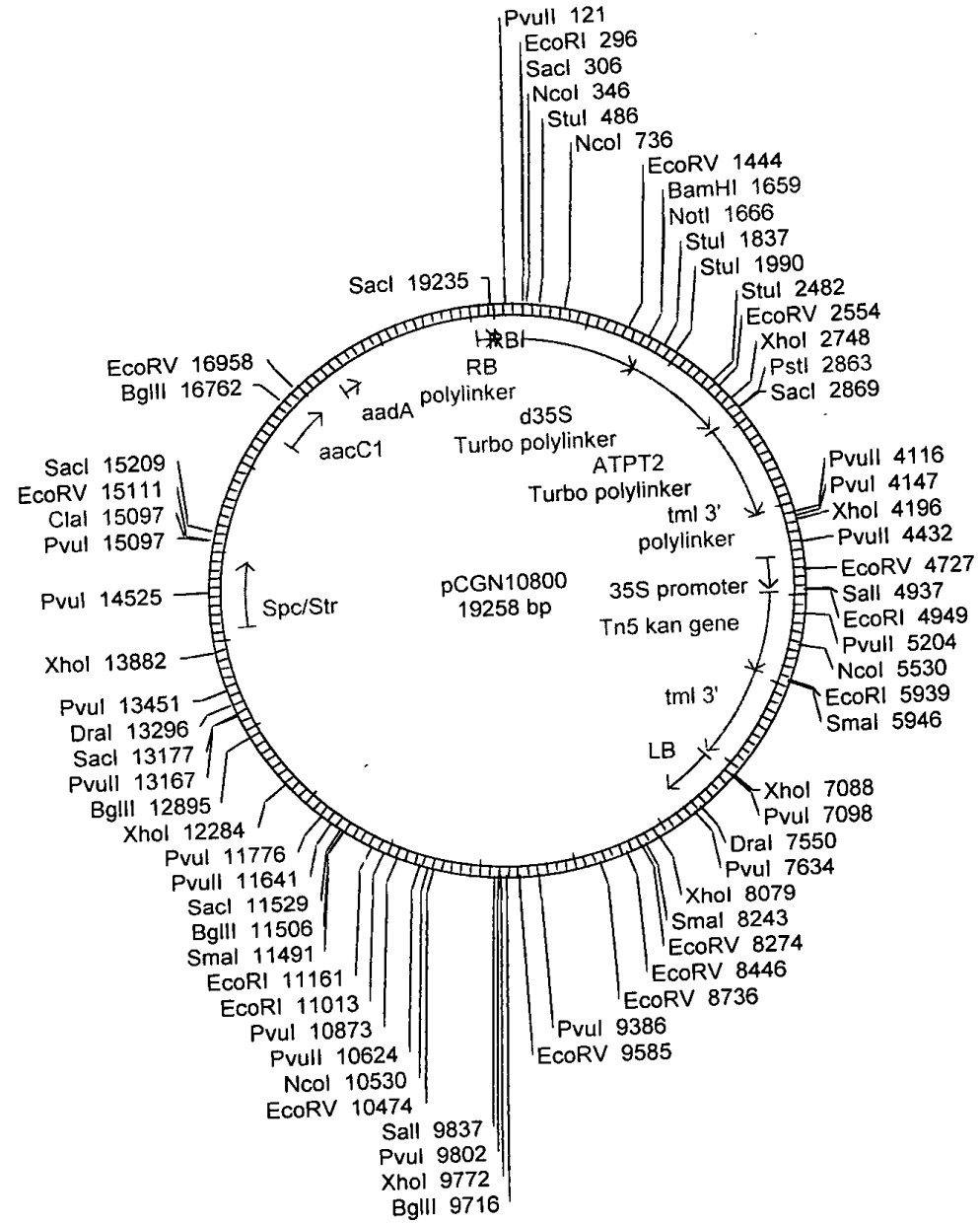

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
BamHI 1659
NotI 1666
StuI 1837
StuI 1990
StuI 2482
EcoRV 2554
XhoI 2748
PstI 2863
SacI 2869
PvuII 4116
PvuI 4147
XhoI 4196
PvuII 4432
EcoRV 4727
SalI 4937
EcoRI 4949
PvuII 5204
NcoI 5530
EcoRI 5939
SmaI 5946
XhoI 7088
PvuI 7098
DraI 7550
PvuI 7634
XhoI 8079
SmaI 8243
EcoRV 8274
EcoRV 8446
EcoRV 8736
PvuI 9386
EcoRV 9585
SalI 9837
PvuI 9802
XhoI 9772
BglII 9716
NcoI 10530
EcoRV 10474
PvuII 10624
PvuI 10873
EcoRI 11013
EcoRI 11161
SmaI 11491
BglII 11506
SacI 11529
PvuII 11641
PvuI 11776
XhoI 12284
BglII 12895
PvuII 13167
SacI 13177
DraI 13296
PvuI 13451
XhoI 13882
PvuI 14525
PvuI 15097
ClaI 15097
EcoRV 15111
SacI 15209
BglII 16762
EcoRV 16958
SacI 19235
RB
RB polylinker
d35S Turbo polylinker
ATPT2 Turbo polylinker
tml 3' polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
aadA
aacC1
Spc/Str
pCGN10800
19258 bp

Figure 2

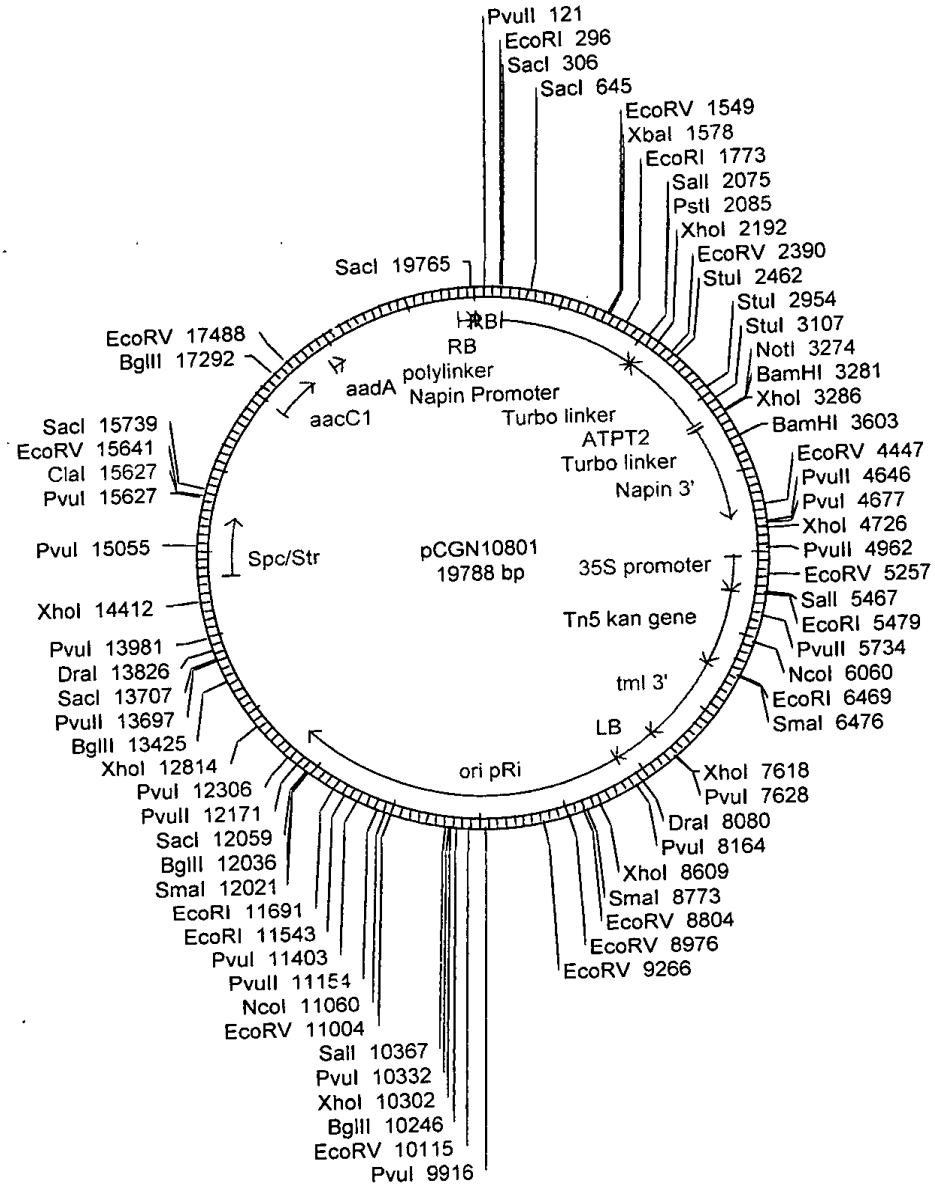

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
SalI 2075
PstI 2085
XhoI 2192
EcoRV 2390
StuI 2462
StuI 2954
StuI 3107
NotI 3274
BamHI 3281
XhoI 3286
BamHI 3603
EcoRV 4447
PvuII 4646
PvuI 4677
XhoI 4726
PvuII 4962
EcoRV 5257
SalI 5467
EcoRI 5479
PvuII 5734
NcoI 6060
EcoRI 6469
SmaI 6476
XhoI 7618
PvuI 7628
DraI 8080
PvuI 8164
XhoI 8609
SmaI 8773
EcoRV 8804
EcoRV 8976
EcoRV 9266
PvuI 9916
EcoRV 10115
BglII 10246
XhoI 10302
PvuI 10332
SalI 10367
EcoRV 11004
NcoI 11060
PvuII 11154
PvuI 11403
EcoRI 11543
EcoRI 11691
SmaI 12021
BglII 12036
SacI 12059
PvuII 12171
PvuI 12306
XhoI 12814
BglII 13425
PvuII 13697
SacI 13707
DraI 13826
PvuI 13981
XhoI 14412
PvuI 15055
ClaI 15627
PvuI 15627
EcoRV 15641
SacI 15739
BglII 17292
EcoRV 17488
SacI 19765
RB
RB
polylinker
Napin Promoter
Turbo linker
ATPT2
Turbo linker
Napin 3'
35S promoter
Tn5 kan gene
tml 3'
LB
ori pRi
aadA
aacC1
Spc/Str
pCGN10801
19788 bp

Figure 3

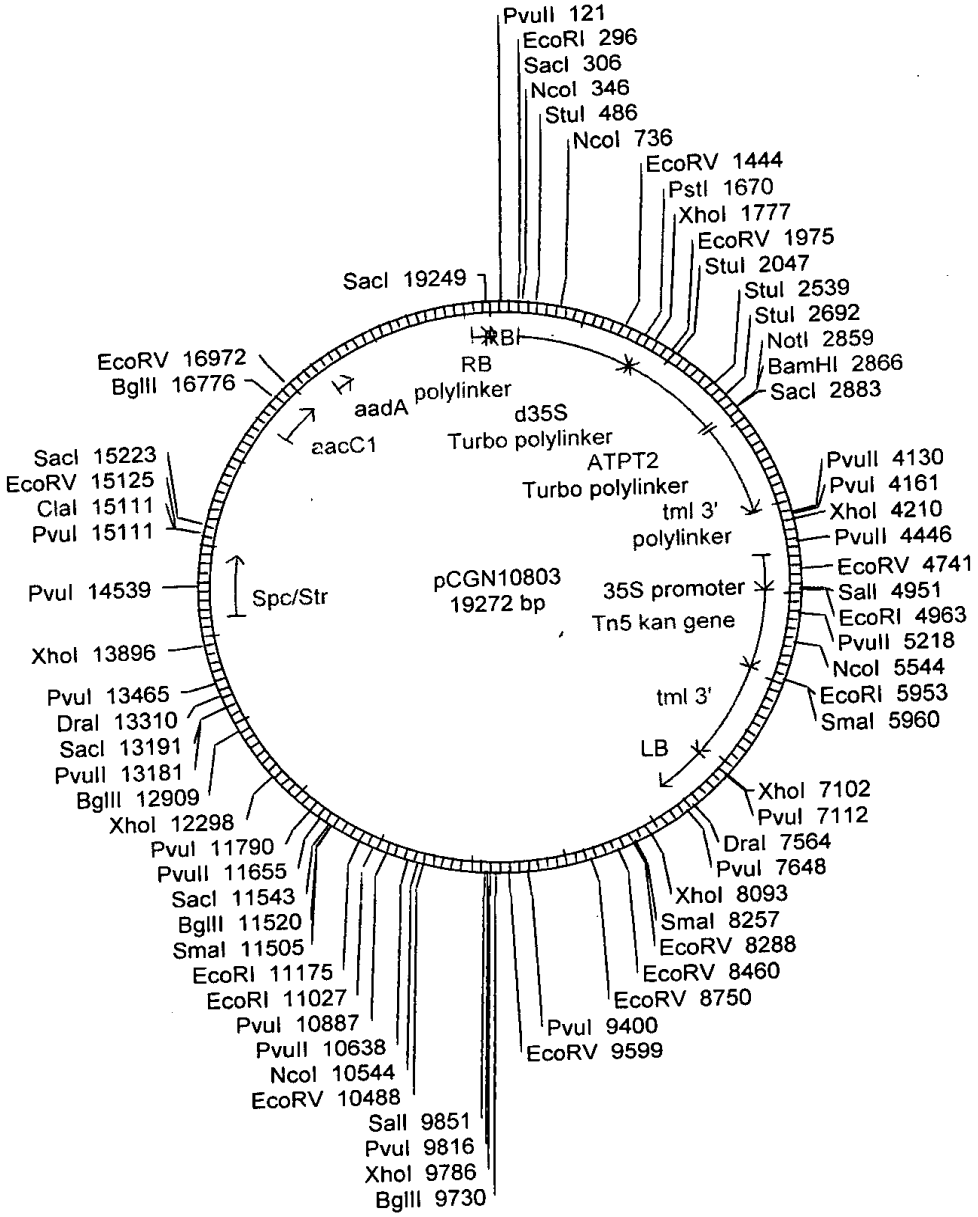

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
PstI 1670
XhoI 1777
EcoRV 1975
StuI 2047
StuI 2539
StuI 2692
NotI 2859
BamHI 2866
SacI 2883
PvuII 4130
PvuI 4161
XhoI 4210
PvuII 4446
EcoRV 4741
SalI 4951
EcoRI 4963
PvuII 5218
NcoI 5544
EcoRI 5953
SmaI 5960
XhoI 7102
PvuI 7112
DraI 7564
PvuI 7648
XhoI 8093
SmaI 8257
EcoRV 8288
EcoRV 8460
EcoRV 8750
PvuI 9400
EcoRV 9599
SalI 9851
PvuI 9816
XhoI 9786
BglII 9730
NcoI 10544
EcoRV 10488
PvuII 10638
PvuI 10887
EcoRI 11027
EcoRI 11175
SmaI 11505
BglII 11520
SacI 11543
PvuII 11655
PvuI 11790
XhoI 12298
BglII 12909
PvuII 13181
SacI 13191
DraI 13310
PvuI 13465
XhoI 13896
PvuI 14539
ClaI 15111
EcoRV 15125
SacI 15223
BglII 16776
EcoRV 16972
SacI 19249
RB
RB
polylinker
aadA
aacC1
Spc/Str
d35S
Turbo polylinker
ATPT2
Turbo polylinker
tml 3'
polylinker
pCGN10803
19272 bp
35S promoter
Tn5 kan gene
tml 3'
LB

Figure 4

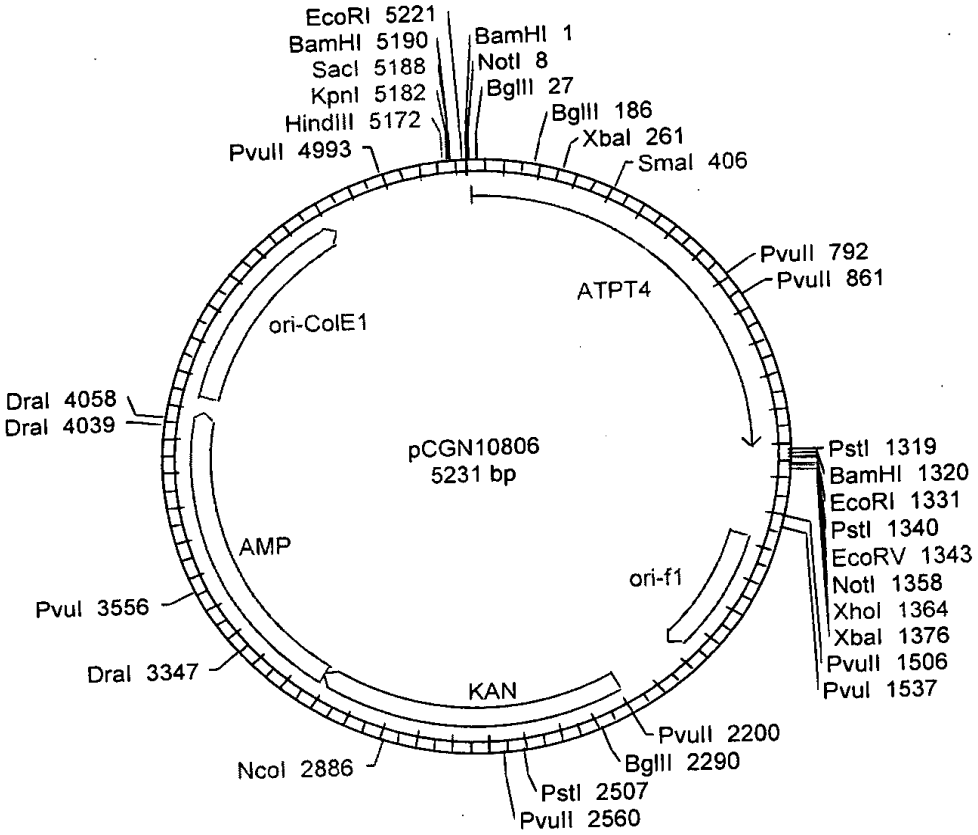

EcoRI 5221
BamHI 5190
SacI 5188
KpnI 5182
HindIII 5172
PvuII 4993
BamHI 1
NotI 8
BglII 27
BglII 186
XbaI 261
SmaI 406
PvuII 792
PvuII 861
ATPT4
ori-ColE1
DraI 4058
DraI 4039
pCGN10806
5231 bp
PstI 1319
BamHI 1320
EcoRI 1331
PstI 1340
EcoRV 1343
NotI 1358
XhoI 1364
XbaI 1376
PvuII 1506
PvuI 1537
AMP
ori-f1
PvuI 3556
DraI 3347
KAN
PvuII 2200
BglII 2290
NcoI 2886
PstI 2507
PvuII 2560

Figure 5

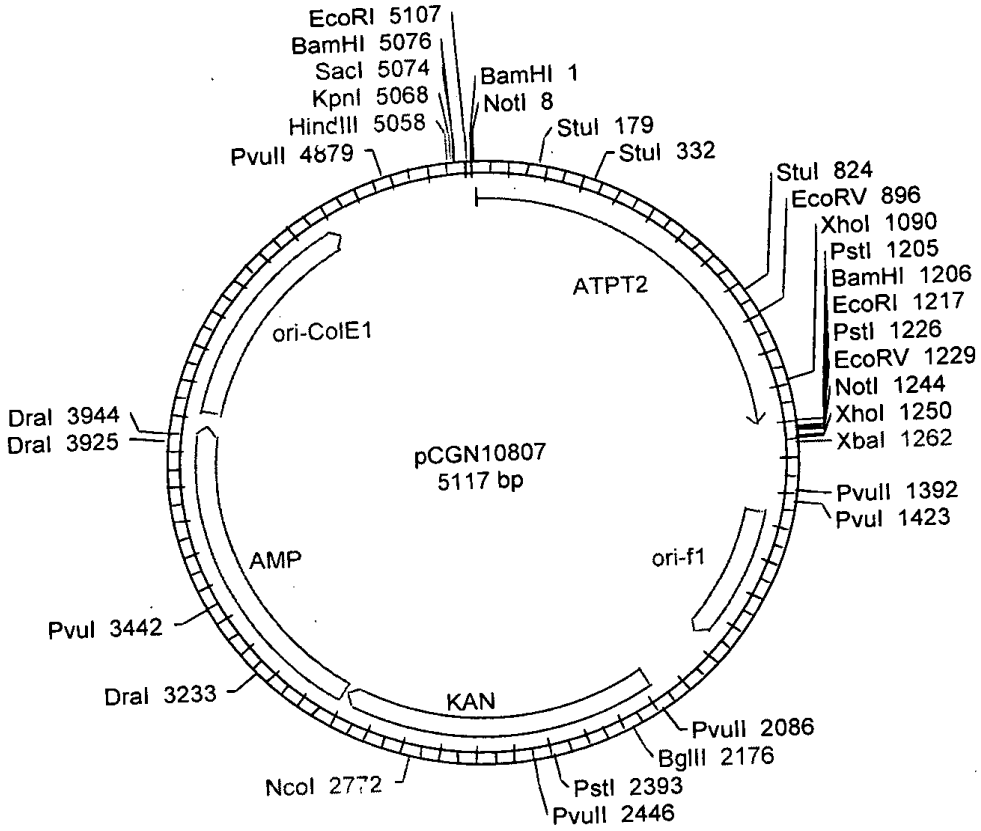

EcoRI 5107
BamHI 5076
SacI 5074
KpnI 5068
HindIII 5058
PvuII 4879
BamHI 1
NotI 8
StuI 179
StuI 332
StuI 824
EcoRV 896
XhoI 1090
PstI 1205
BamHI 1206
EcoRI 1217
PstI 1226
EcoRV 1229
NotI 1244
XhoI 1250
XbaI 1262
PvuII 1392
PvuI 1423
ATPT2
ori-ColE1
DraI 3944
DraI 3925
pCGN10807
5117 bp
AMP
ori-f1
PvuI 3442
DraI 3233
KAN
PvuII 2086
BglII 2176
NcoI 2772
PstI 2393
PvuII 2446

Figure 6

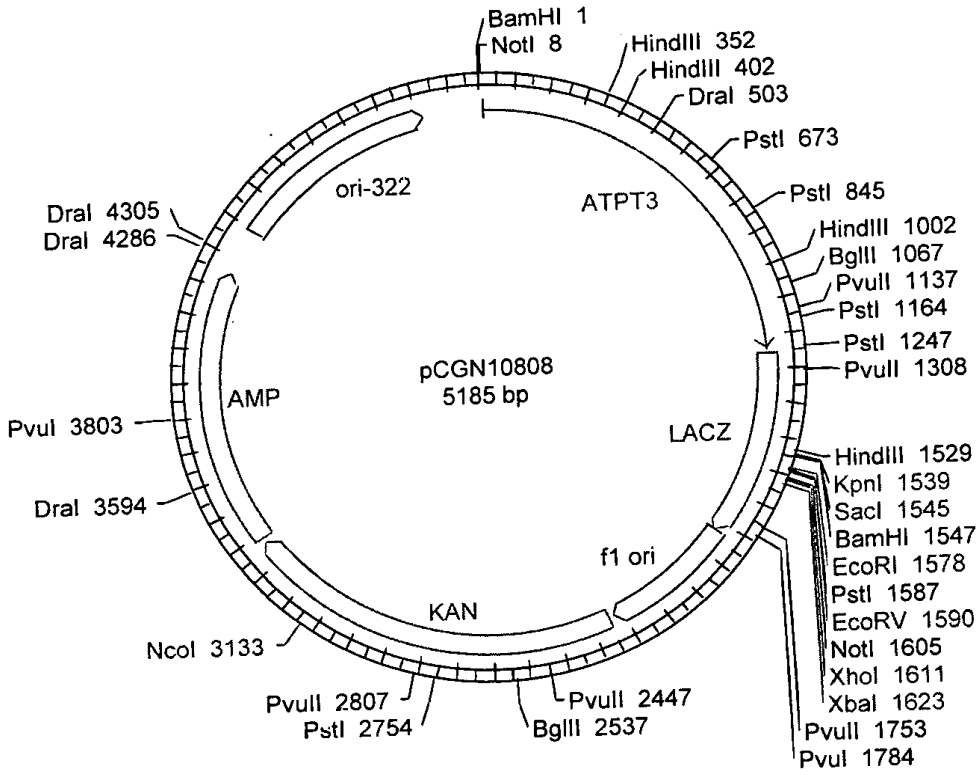

BamHI 1
NotI 8
HindIII 352
HindIII 402
DraI 503
PstI 673
PstI 845
HindIII 1002
BglII 1067
PvuII 1137
PstI 1164
PstI 1247
PvuII 1308
HindIII 1529
KpnI 1539
SacI 1545
BamHI 1547
EcoRI 1578
PstI 1587
EcoRV 1590
NotI 1605
XhoI 1611
XbaI 1623
PvuII 1753
PvuI 1784
PvuII 2447
BglII 2537
PvuII 2807
PstI 2754
NcoI 3133
DraI 3594
PvuI 3803
DraI 4286
DraI 4305
ori-322
ATPT3
AMP
pCGN10808
5185 bp
LACZ
f1 ori
KAN

Figure 7

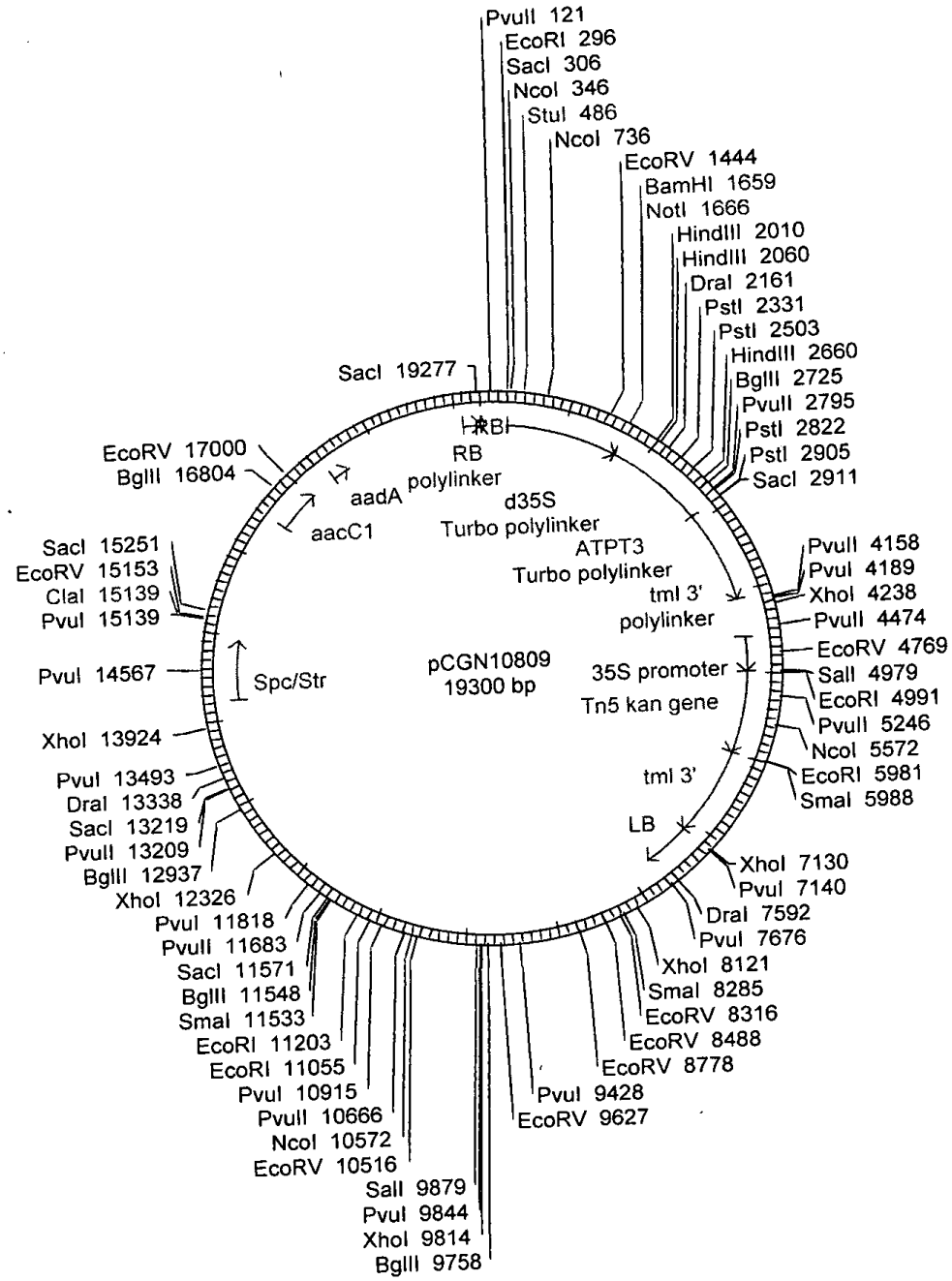

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
BamHI 1659
NotI 1666
HindIII 2010
HindIII 2060
DraI 2161
PstI 2331
PstI 2503
HindIII 2660
BglII 2725
PvuII 2795
PstI 2822
PstI 2905
SacI 2911
PvuII 4158
PvuI 4189
XhoI 4238
PvuII 4474
EcoRV 4769
SalI 4979
EcoRI 4991
PvuII 5246
NcoI 5572
EcoRI 5981
SmaI 5988
XhoI 7130
PvuI 7140
DraI 7592
PvuI 7676
XhoI 8121
SmaI 8285
EcoRV 8316
EcoRV 8488
EcoRV 8778
PvuI 9428
EcoRV 9627
SalI 9879
PvuI 9844
XhoI 9814
BglII 9758
NcoI 10572
EcoRV 10516
PvuI 10915
PvuII 10666
EcoRI 11203
EcoRI 11055
SmaI 11533
BglII 11548
SacI 11571
PvuII 11683
PvuI 11818
XhoI 12326
BglII 12937
PvuII 13209
SacI 13219
DraI 13338
PvuI 13493
XhoI 13924
PvuI 14567
ClaI 15139
PvuI 15139
EcoRV 15153
SacI 15251
EcoRV 17000
BglII 16804
SacI 19277
RB
RB
polylinker
aadA
aacC1
d35S
Turbo polylinker
ATPT3
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10809
19300 bp

Figure 8

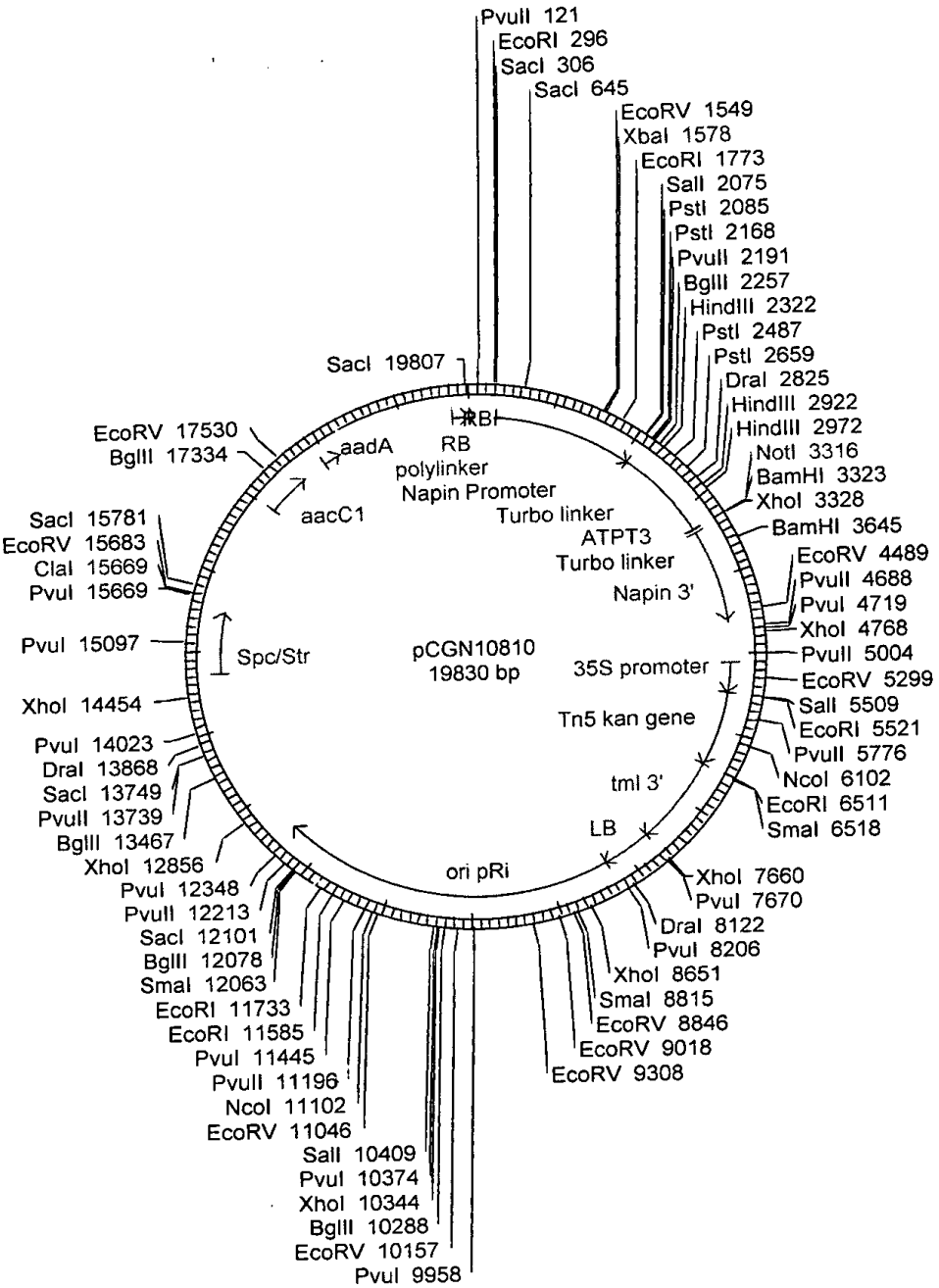

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
SalI 2075
PstI 2085
PstI 2168
PvuII 2191
BglII 2257
HindIII 2322
PstI 2487
PstI 2659
DraI 2825
HindIII 2922
HindIII 2972
NotI 3316
BamHI 3323
XhoI 3328
BamHI 3645
EcoRV 4489
PvuII 4688
PvuI 4719
XhoI 4768
PvuII 5004
EcoRV 5299
SalI 5509
EcoRI 5521
PvuII 5776
NcoI 6102
EcoRI 6511
SmaI 6518
XhoI 7660
PvuI 7670
DraI 8122
PvuI 8206
XhoI 8651
SmaI 8815
EcoRV 8846
EcoRV 9018
EcoRV 9308
PvuI 9958
EcoRV 10157
BglII 10288
XhoI 10344
PvuI 10374
SalI 10409
EcoRV 11046
NcoI 11102
PvuII 11196
PvuI 11445
EcoRI 11585
EcoRI 11733
SmaI 12063
BglII 12078
SacI 12101
PvuII 12213
PvuI 12348
XhoI 12856
BglII 13467
PvuII 13739
SacI 13749
DraI 13868
PvuI 14023
XhoI 14454
PvuI 15097
PvuI 15669
ClaI 15669
EcoRV 15683
SacI 15781
BglII 17334
EcoRV 17530
SacI 19807
RB
aadA
RB
polylinker
Napin Promoter
Turbo linker
ATPT3
Turbo linker
Napin 3'
35S promoter
Tn5 kan gene
tml 3'
LB
ori pRi
aacC1
Spc/Str
pCGN10810
19830 bp

Figure 9

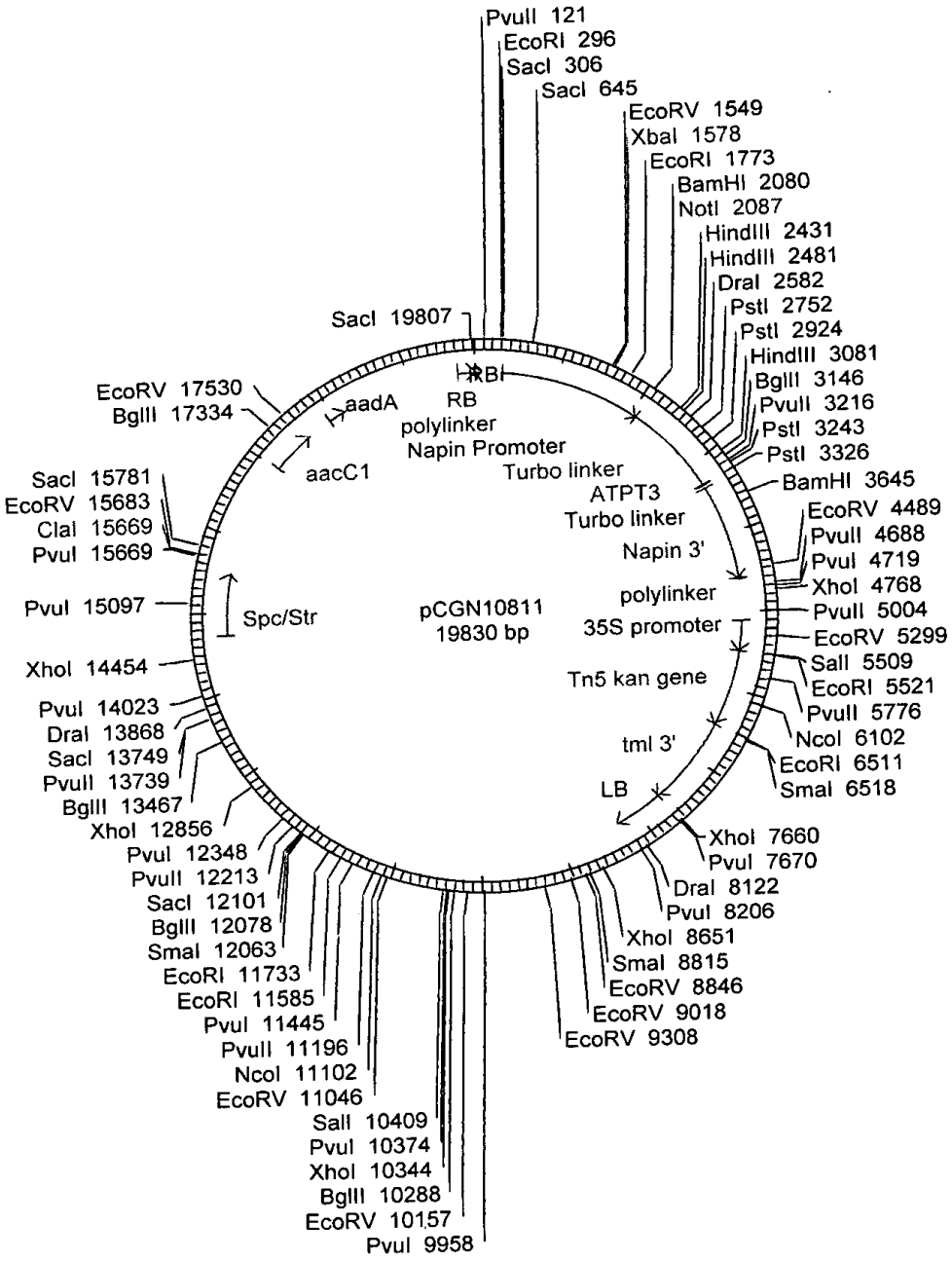

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
BamHI 2080
NotI 2087
HindIII 2431
HindIII 2481
DraI 2582
PstI 2752
PstI 2924
HindIII 3081
BglII 3146
PvuII 3216
PstI 3243
PstI 3326
BamHI 3645
EcoRV 4489
PvuII 4688
PvuI 4719
XhoI 4768
PvuII 5004
EcoRV 5299
SalI 5509
EcoRI 5521
PvuII 5776
NcoI 6102
EcoRI 6511
SmaI 6518
XhoI 7660
PvuI 7670
DraI 8122
PvuI 8206
XhoI 8651
SmaI 8815
EcoRV 8846
EcoRV 9018
EcoRV 9308
PvuI 9958
EcoRV 10157
BglII 10288
XhoI 10344
PvuI 10374
SalI 10409
EcoRV 11046
NcoI 11102
PvuII 11196
PvuI 11445
EcoRI 11585
EcoRI 11733
SmaI 12063
BglII 12078
SacI 12101
PvuII 12213
PvuI 12348
XhoI 12856
BglII 13467
PvuII 13739
SacI 13749
DraI 13868
PvuI 14023
XhoI 14454
PvuI 15097
ClaI 15669
EcoRV 15683
SacI 15781
BglII 17334
EcoRV 17530
SacI 19807
aadA
aacC1
RB
polylinker
Napin Promoter
Turbo linker
ATPT3
Turbo linker
Napin 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10811
19830 bp

Figure 10

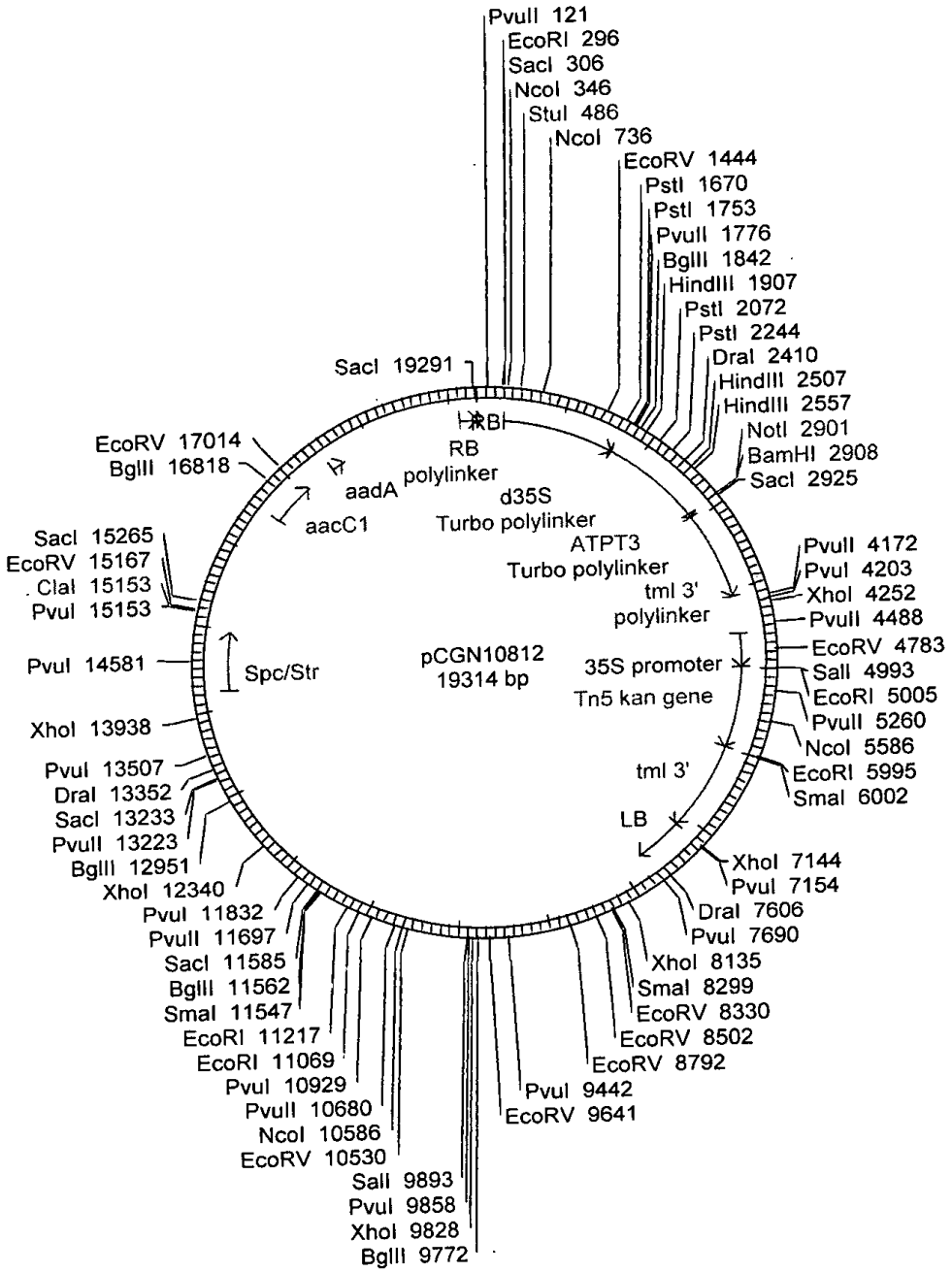

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
PstI 1670
PstI 1753
PvuII 1776
BglII 1842
HindIII 1907
PstI 2072
PstI 2244
DraI 2410
HindIII 2507
HindIII 2557
NotI 2901
BamHI 2908
SacI 2925
PvuII 4172
PvuI 4203
XhoI 4252
PvuII 4488
EcoRV 4783
SalI 4993
EcoRI 5005
PvuII 5260
NcoI 5586
EcoRI 5995
SmaI 6002
XhoI 7144
PvuI 7154
DraI 7606
PvuI 7690
XhoI 8135
SmaI 8299
EcoRV 8330
EcoRV 8502
EcoRV 8792
PvuI 9442
EcoRV 9641
SalI 9893
PvuI 9858
XhoI 9828
BglII 9772
EcoRV 10530
NcoI 10586
PvuII 10680
PvuI 10929
EcoRI 11069
EcoRI 11217
SmaI 11547
BglII 11562
SacI 11585
PvuII 11697
PvuI 11832
XhoI 12340
BglII 12951
PvuII 13223
SacI 13233
DraI 13352
PvuI 13507
XhoI 13938
PvuI 14581
PvuI 15153
ClaI 15153
EcoRV 15167
SacI 15265
BglII 16818
EcoRV 17014
SacI 19291
RB
RB
polylinker
aadA
aacC1
d35S
Turbo polylinker
ATPT3
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10812
19314 bp

Figure 11

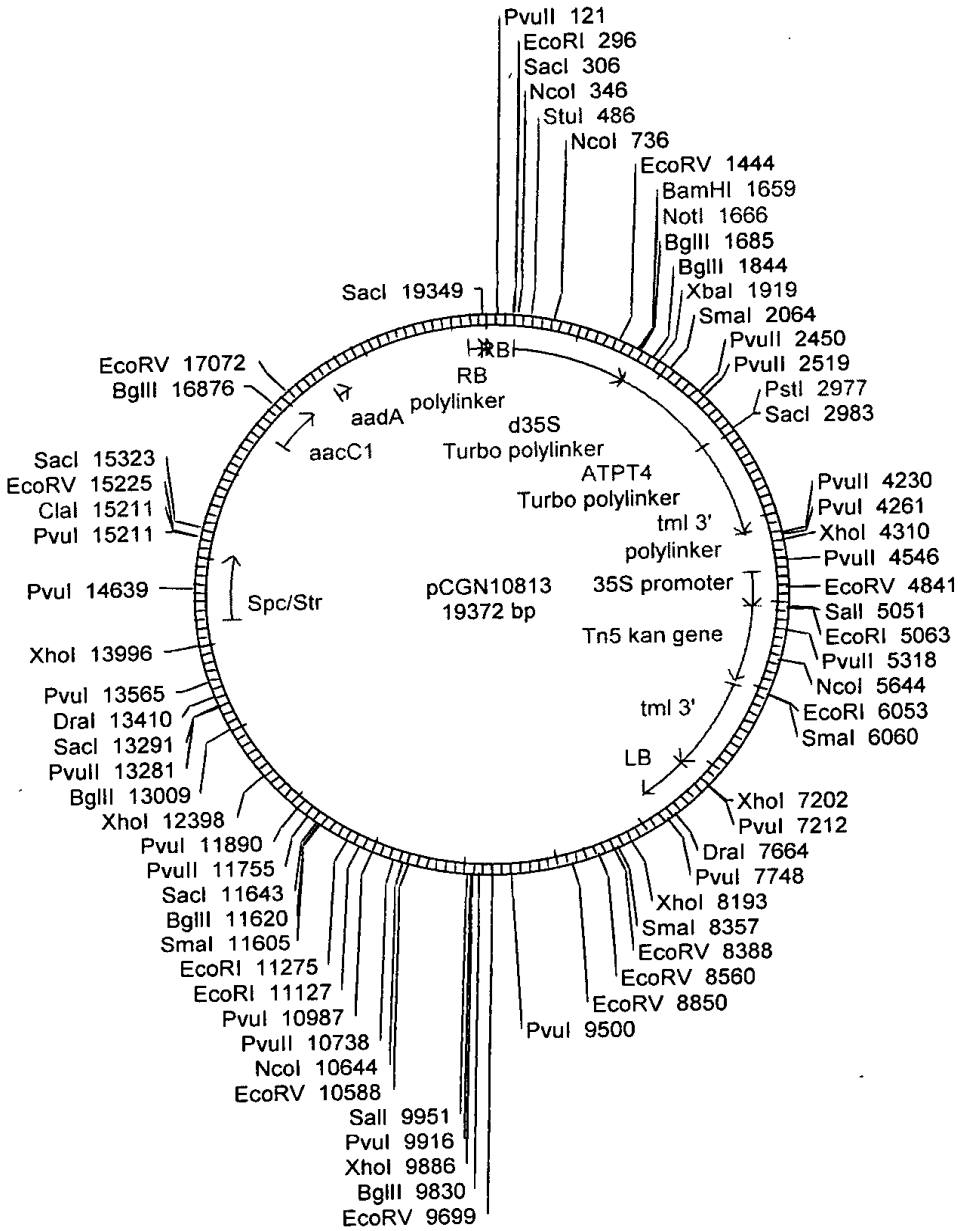

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
BamHI 1659
NotI 1666
BglII 1685
BglII 1844
XbaI 1919
SmaI 2064
PvuII 2450
PvuII 2519
PstI 2977
SacI 2983
PvuII 4230
PvuI 4261
XhoI 4310
PvuII 4546
EcoRV 4841
SalI 5051
EcoRI 5063
PvuII 5318
NcoI 5644
EcoRI 6053
SmaI 6060
XhoI 7202
PvuI 7212
DraI 7664
PvuI 7748
XhoI 8193
SmaI 8357
EcoRV 8388
EcoRV 8560
EcoRV 8850
PvuI 9500
SalI 9951
PvuI 9916
XhoI 9886
BglII 9830
EcoRV 9699
PvuI 10987
PvuII 10738
NcoI 10644
EcoRV 10588
EcoRI 11275
EcoRI 11127
SacI 11643
BglII 11620
SmaI 11605
PvuI 11890
PvuII 11755
XhoI 12398
PvuI 13565
DraI 13410
SacI 13291
PvuII 13281
BglII 13009
XhoI 13996
PvuI 14639
SacI 15323
EcoRV 15225
ClaI 15211
PvuI 15211
EcoRV 17072
BglII 16876
SacI 19349
RB
RB
polylinker
aadA
aacC1
d35S
Turbo polylinker
ATPT4
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10813
19372 bp

Figure 12

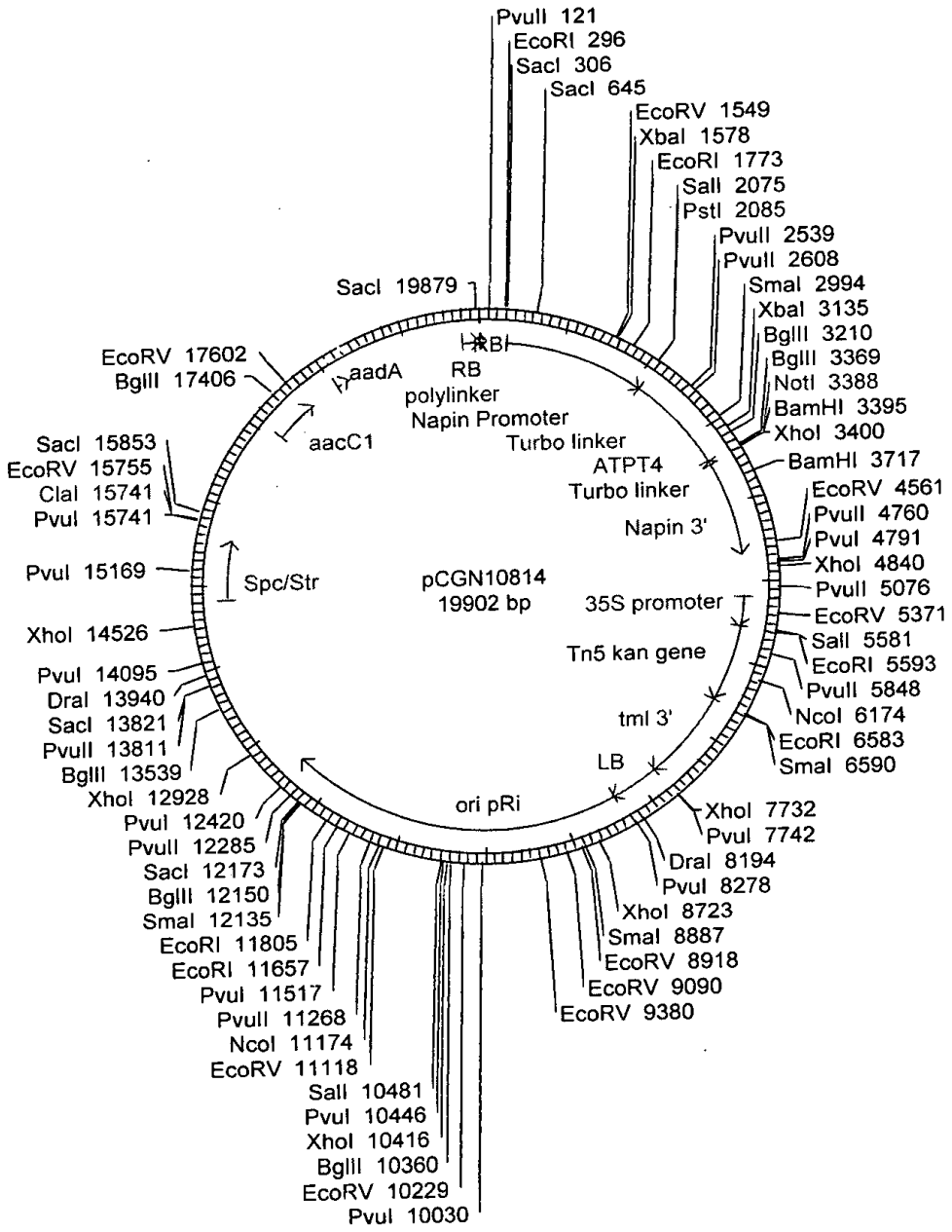

pCGN10814
19902 bp
PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
SalI 2075
PstI 2085
PvuII 2539
PvuII 2608
SmaI 2994
XbaI 3135
BglII 3210
BglII 3369
NotI 3388
BamHI 3395
XhoI 3400
BamHI 3717
EcoRV 4561
PvuII 4760
PvuI 4791
XhoI 4840
PvuII 5076
EcoRV 5371
SalI 5581
EcoRI 5593
PvuII 5848
NcoI 6174
EcoRI 6583
SmaI 6590
XhoI 7732
PvuI 7742
DraI 8194
PvuI 8278
XhoI 8723
SmaI 8887
EcoRV 8918
EcoRV 9090
EcoRV 9380
PvuI 10030
EcoRV 10229
BglII 10360
XhoI 10416
PvuI 10446
SalI 10481
EcoRV 11118
NcoI 11174
PvuII 11268
PvuI 11517
EcoRI 11657
EcoRI 11805
SmaI 12135
BglII 12150
SacI 12173
PvuII 12285
PvuI 12420
XhoI 12928
BglII 13539
PvuII 13811
SacI 13821
DraI 13940
PvuI 14095
XhoI 14526
PvuI 15169
PvuI 15741
ClaI 15741
EcoRV 15755
SacI 15853
BglII 17406
EcoRV 17602
SacI 19879
RB
aadA
RB
polylinker
Napin Promoter
Turbo linker
ATPT4
Turbo linker
Napin 3'
35S promoter
Tn5 kan gene
tml 3'
LB
ori pRi
aacC1
Spc/Str

Figure 13

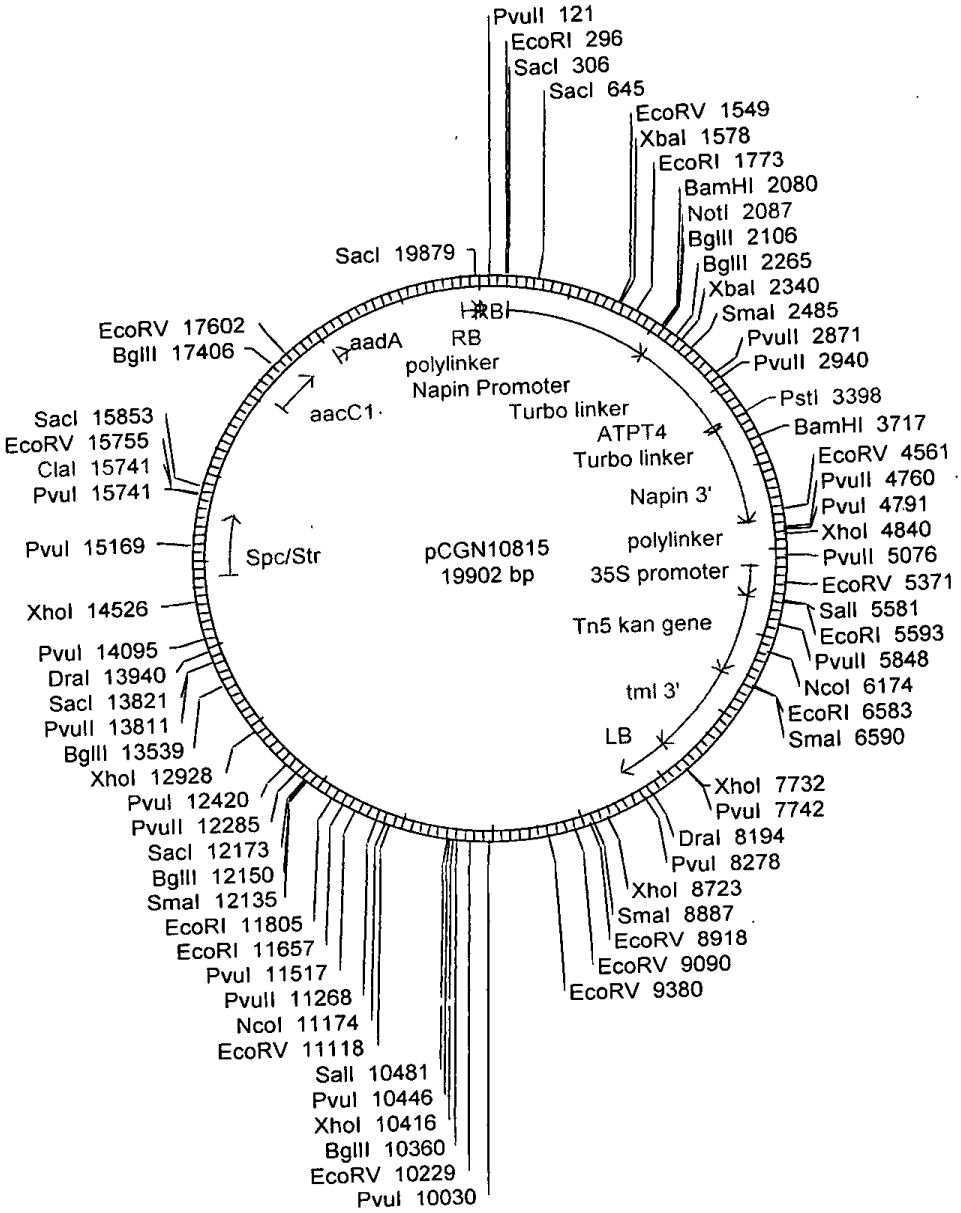

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
BamHI 2080
NotI 2087
BglII 2106
BglII 2265
XbaI 2340
SmaI 2485
PvuII 2871
PvuII 2940
PstI 3398
BamHI 3717
EcoRV 4561
PvuII 4760
PvuI 4791
XhoI 4840
PvuII 5076
EcoRV 5371
SalI 5581
EcoRI 5593
PvuII 5848
NcoI 6174
EcoRI 6583
SmaI 6590
XhoI 7732
PvuI 7742
DraI 8194
PvuI 8278
XhoI 8723
SmaI 8887
EcoRV 8918
EcoRV 9090
EcoRV 9380
PvuI 10030
EcoRV 10229
BglII 10360
XhoI 10416
PvuI 10446
SalI 10481
EcoRV 11118
NcoI 11174
PvuII 11268
PvuI 11517
EcoRI 11657
EcoRI 11805
SmaI 12135
BglII 12150
SacI 12173
PvuII 12285
PvuI 12420
XhoI 12928
BglII 13539
PvuII 13811
SacI 13821
DraI 13940
PvuI 14095
XhoI 14526
PvuI 15169
PvuI 15741
ClaI 15741
EcoRV 15755
SacI 15853
BglII 17406
EcoRV 17602
SacI 19879
RB
aadA
aacC1
Spc/Str
pCGN10815
19902 bp
RB
polylinker
Napin Promoter
Turbo linker
ATPT4
Turbo linker
Napin 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB

Figure 14

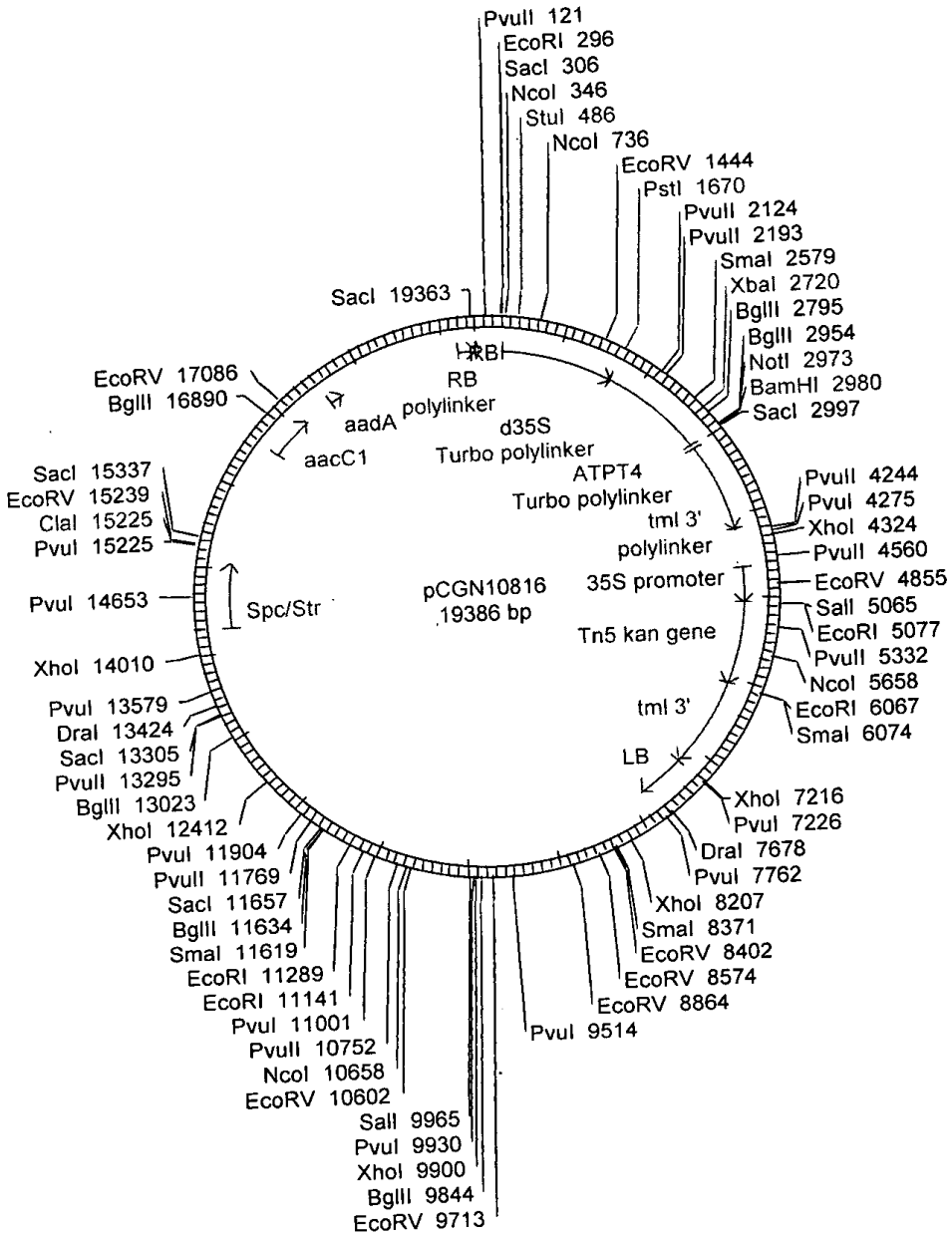

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
PstI 1670
PvuII 2124
PvuII 2193
SmaI 2579
XbaI 2720
BglII 2795
BglII 2954
NotI 2973
BamHI 2980
SacI 2997
PvuII 4244
PvuI 4275
XhoI 4324
PvuII 4560
EcoRV 4855
SalI 5065
EcoRI 5077
PvuII 5332
NcoI 5658
EcoRI 6067
SmaI 6074
XhoI 7216
PvuI 7226
DraI 7678
PvuI 7762
XhoI 8207
SmaI 8371
EcoRV 8402
EcoRV 8574
EcoRV 8864
PvuI 9514
SalI 9965
PvuI 9930
XhoI 9900
BglII 9844
EcoRV 9713
EcoRV 10602
NcoI 10658
PvuII 10752
PvuI 11001
EcoRI 11141
EcoRI 11289
SmaI 11619
BglII 11634
SacI 11657
PvuII 11769
PvuI 11904
XhoI 12412
BglII 13023
PvuII 13295
SacI 13305
DraI 13424
PvuI 13579
XhoI 14010
PvuI 14653
ClaI 15225
EcoRV 15239
SacI 15337
BglII 16890
EcoRV 17086
SacI 19363
RB
RB
polylinker
aadA
aacC1
d35S
Turbo polylinker
ATPT4
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10816
19386 bp

Figure 15

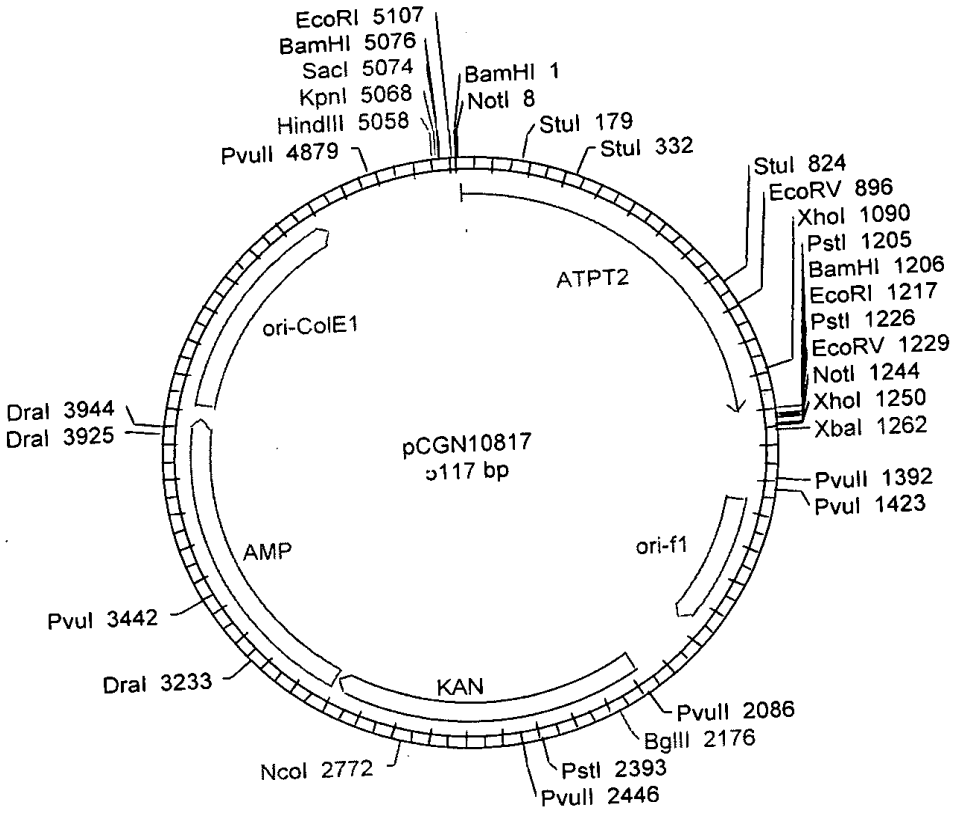

EcoRI 5107
BamHI 5076
SacI 5074
KpnI 5068
HindIII 5058
PvuII 4879
BamHI 1
NotI 8
StuI 179
StuI 332
StuI 824
EcoRV 896
XhoI 1090
PstI 1205
BamHI 1206
EcoRI 1217
PstI 1226
EcoRV 1229
NotI 1244
XhoI 1250
XbaI 1262
PvuII 1392
PvuI 1423
ATPT2
ori-ColE1
DraI 3944
DraI 3925
pCGN10817
5117 bp
ori-f1
AMP
PvuI 3442
DraI 3233
KAN
PvuII 2086
BglII 2176
NcoI 2772
PstI 2393
PvuII 2446

Figure 16

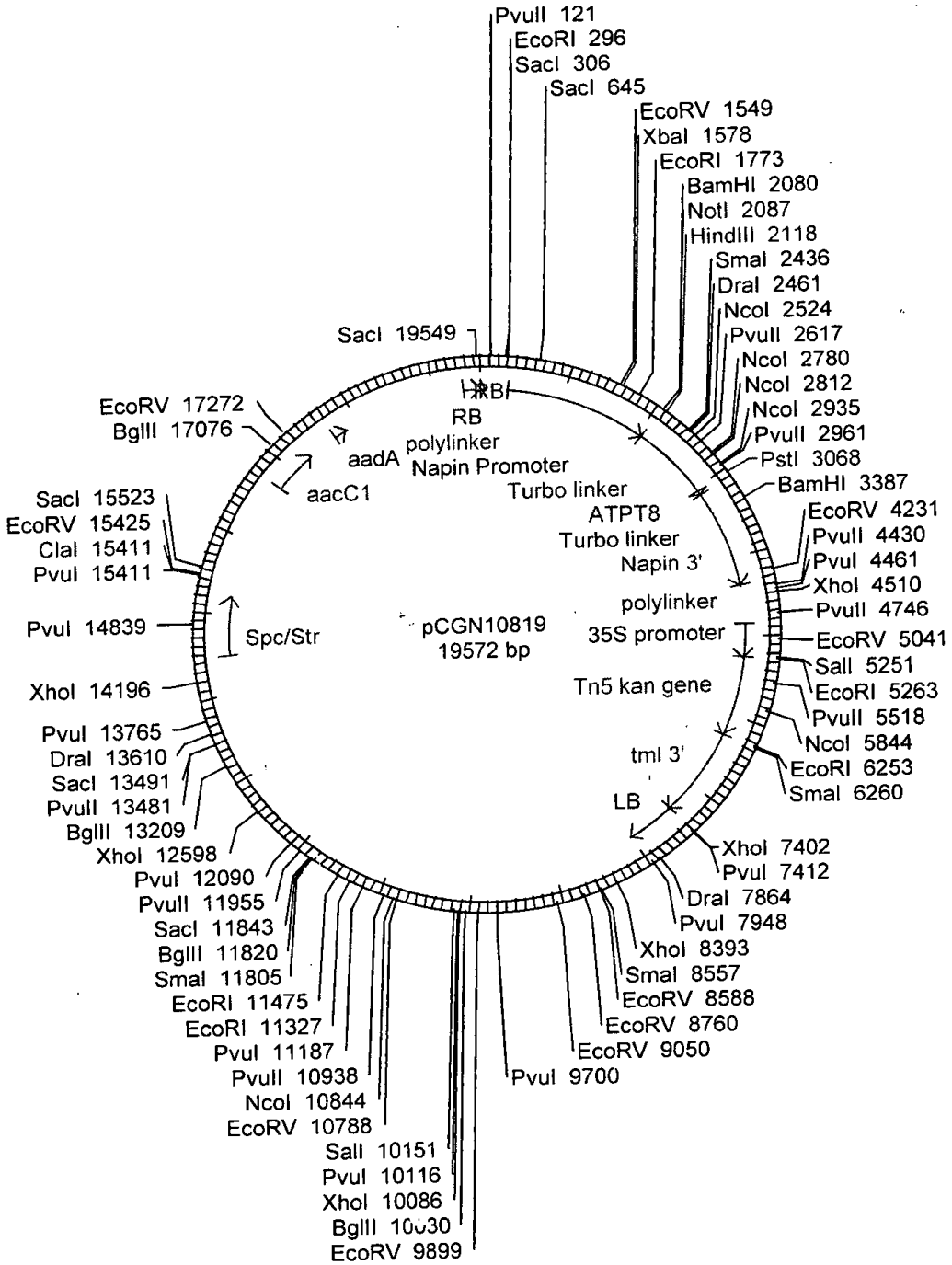

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
BamHI 2080
NotI 2087
HindIII 2118
SmaI 2436
DraI 2461
NcoI 2524
PvuII 2617
NcoI 2780
NcoI 2812
NcoI 2935
PvuII 2961
PstI 3068
BamHI 3387
EcoRV 4231
PvuII 4430
PvuI 4461
XhoI 4510
PvuII 4746
EcoRV 5041
SalI 5251
EcoRI 5263
PvuII 5518
NcoI 5844
EcoRI 6253
SmaI 6260
XhoI 7402
PvuI 7412
DraI 7864
PvuI 7948
XhoI 8393
SmaI 8557
EcoRV 8588
EcoRV 8760
EcoRV 9050
PvuI 9700
EcoRV 9899
BglII 10030
XhoI 10086
PvuI 10116
SalI 10151
NcoI 10844
EcoRV 10788
PvuII 10938
PvuI 11187
EcoRI 11327
EcoRI 11475
SmaI 11805
BglII 11820
SacI 11843
PvuII 11955
PvuI 12090
XhoI 12598
BglII 13209
PvuII 13481
SacI 13491
DraI 13610
PvuI 13765
XhoI 14196
PvuI 14839
SacI 15523
EcoRV 15425
ClaI 15411
PvuI 15411
EcoRV 17272
BglII 17076
SacI 19549
RB
RB
polylinker
aadA
Napin Promoter
aacC1
Turbo linker
ATPT8
Turbo linker
Napin 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10819
19572 bp

Figure 17

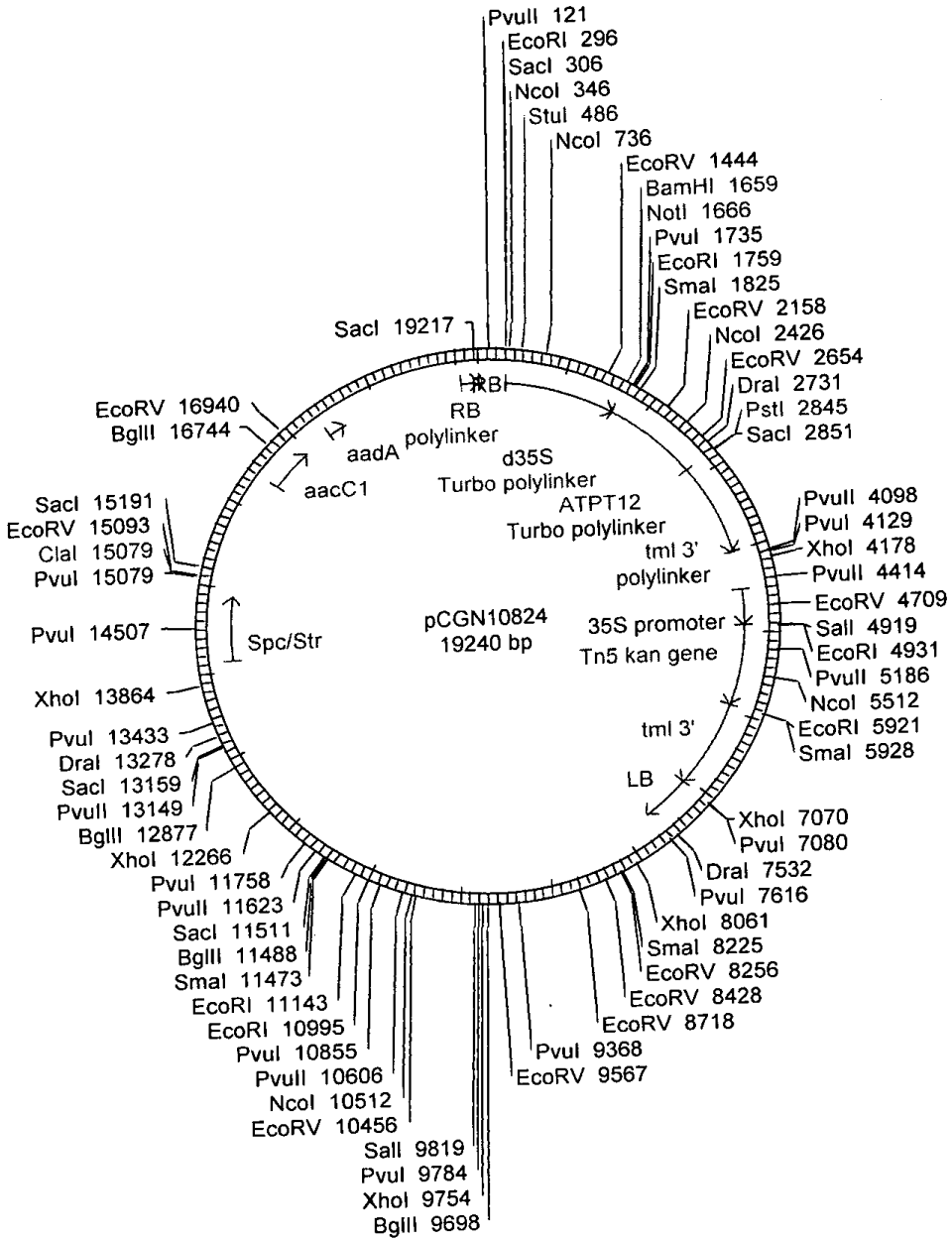

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
BamHI 1659
NotI 1666
PvuI 1735
EcoRI 1759
SmaI 1825
EcoRV 2158
NcoI 2426
EcoRV 2654
DraI 2731
PstI 2845
SacI 2851
PvuII 4098
PvuI 4129
XhoI 4178
PvuII 4414
EcoRV 4709
SalI 4919
EcoRI 4931
PvuII 5186
NcoI 5512
EcoRI 5921
SmaI 5928
XhoI 7070
PvuI 7080
DraI 7532
PvuI 7616
XhoI 8061
SmaI 8225
EcoRV 8256
EcoRV 8428
EcoRV 8718
PvuI 9368
EcoRV 9567
SalI 9819
PvuI 9784
XhoI 9754
BglII 9698
PvuI 10855
PvuII 10606
NcoI 10512
EcoRV 10456
EcoRI 10995
EcoRI 11143
SmaI 11473
BglII 11488
SacI 11511
PvuII 11623
PvuI 11758
XhoI 12266
BglII 12877
PvuII 13149
SacI 13159
DraI 13278
PvuI 13433
XhoI 13864
PvuI 14507
PvuI 15079
ClaI 15079
EcoRV 15093
SacI 15191
BglII 16744
EcoRV 16940
SacI 19217
RB
RB
polylinker
aadA
aacC1
d35S
Turbo polylinker
ATPT12
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
Spc/Str
pCGN10824
19240 bp

Figure 18

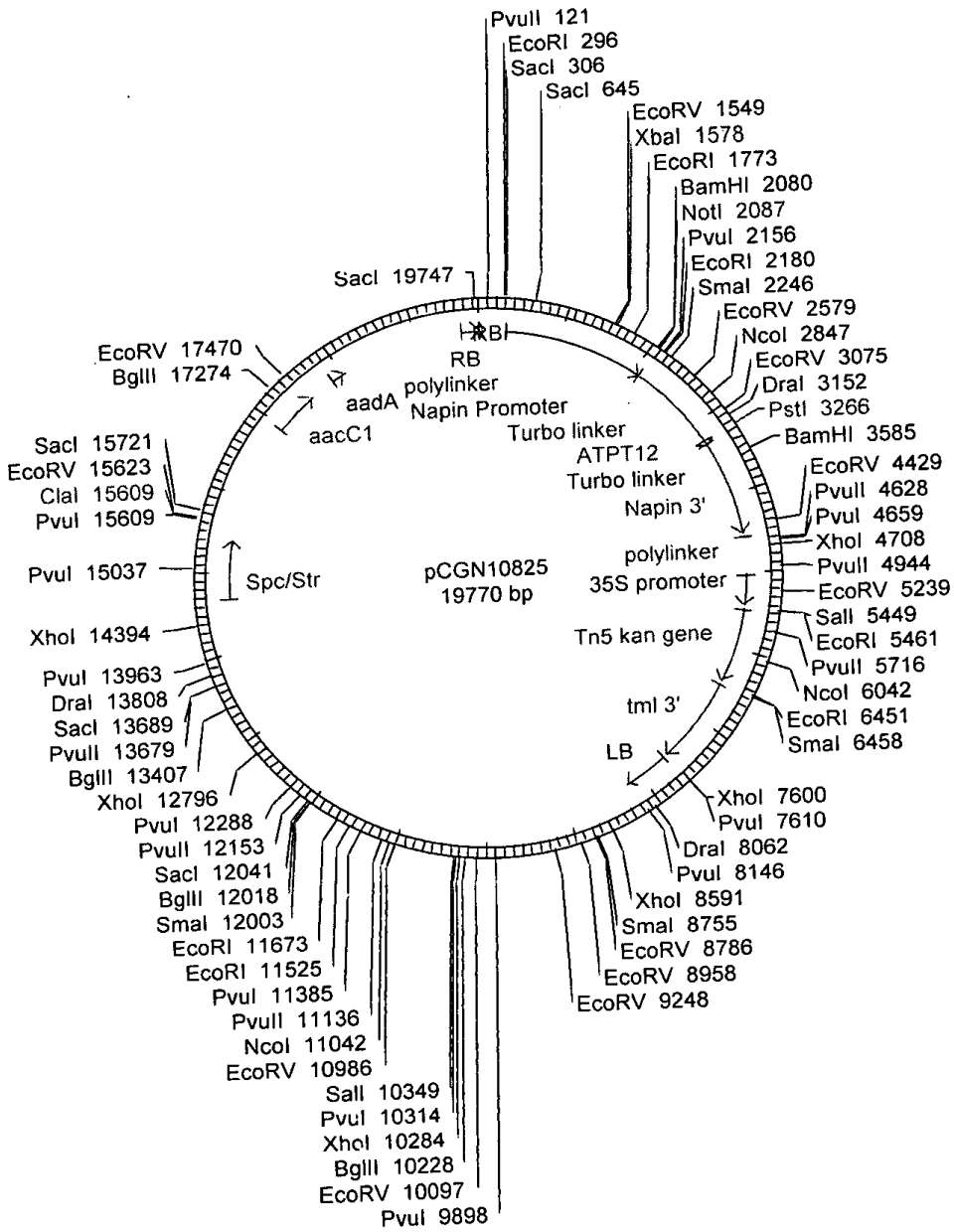

PvuII 121
EcoRI 296
SacI 306
SacI 645
EcoRV 1549
XbaI 1578
EcoRI 1773
BamHI 2080
NotI 2087
PvuI 2156
EcoRI 2180
SmaI 2246
EcoRV 2579
NcoI 2847
EcoRV 3075
DraI 3152
PstI 3266
BamHI 3585
EcoRV 4429
PvuII 4628
PvuI 4659
XhoI 4708
PvuII 4944
EcoRV 5239
SalI 5449
EcoRI 5461
PvuII 5716
NcoI 6042
EcoRI 6451
SmaI 6458
XhoI 7600
PvuI 7610
DraI 8062
PvuI 8146
XhoI 8591
SmaI 8755
EcoRV 8786
EcoRV 8958
EcoRV 9248
PvuI 9898
EcoRV 10097
BglII 10228
XhoI 10284
PvuI 10314
SalI 10349
EcoRV 10986
NcoI 11042
PvuII 11136
PvuI 11385
EcoRI 11525
EcoRI 11673
SmaI 12003
BglII 12018
SacI 12041
PvuII 12153
PvuI 12288
XhoI 12796
BglII 13407
PvuII 13679
SacI 13689
DraI 13808
PvuI 13963
XhoI 14394
PvuI 15037
ClaI 15609
EcoRV 15623
SacI 15721
BglII 17274
EcoRV 17470
SacI 19747
RB
polylinker
Napin Promoter
Turbo linker
ATPT12
Turbo linker
Napin 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
aadA
aacC1
Spc/Str
pCGN10825
19770 bp

Figure 19

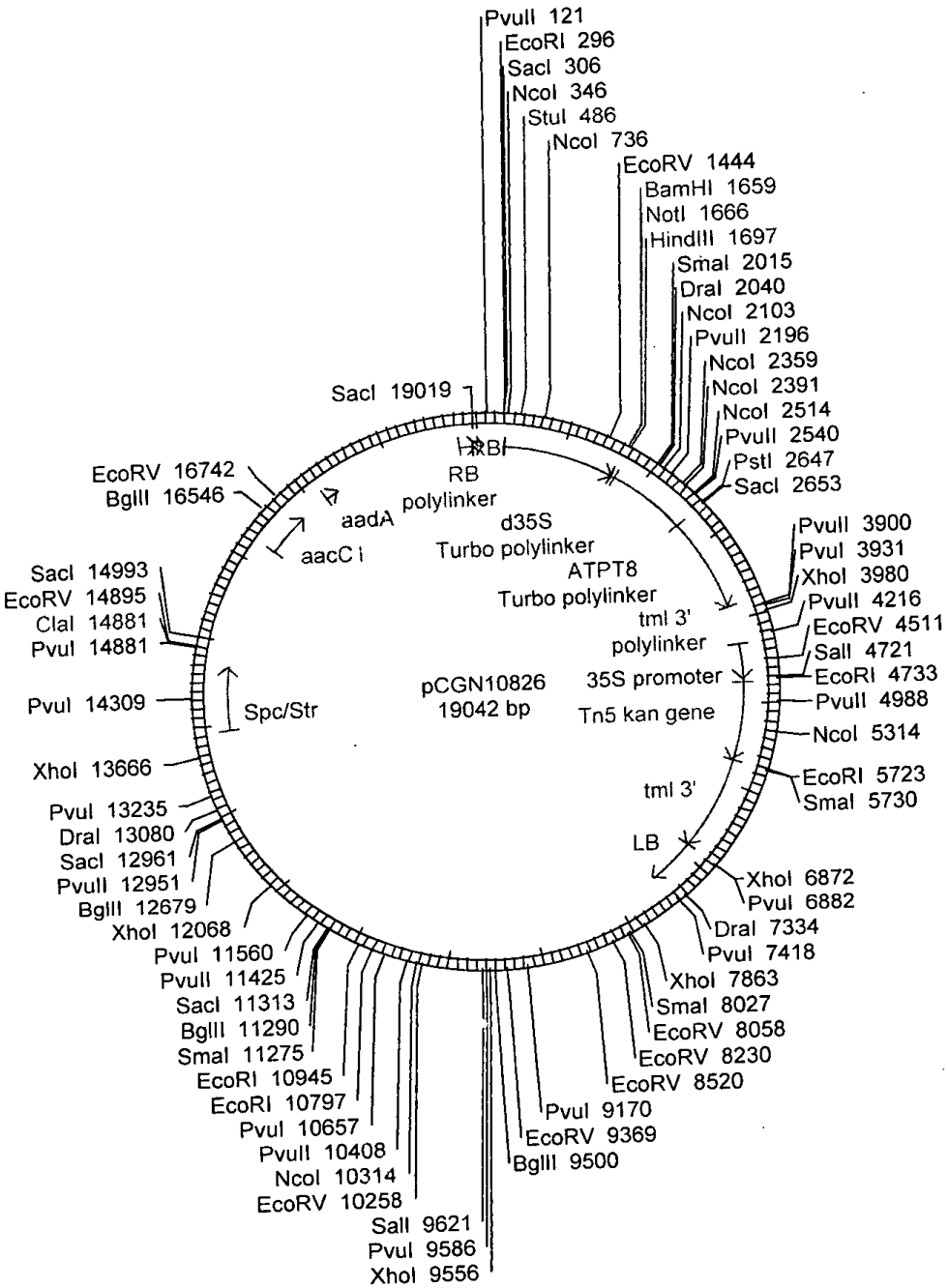

PvuII 121
EcoRI 296
SacI 306
NcoI 346
StuI 486
NcoI 736
EcoRV 1444
BamHI 1659
NotI 1666
HindIII 1697
SmaI 2015
DraI 2040
NcoI 2103
PvuII 2196
NcoI 2359
NcoI 2391
NcoI 2514
PvuII 2540
PstI 2647
SacI 2653
PvuII 3900
PvuI 3931
XhoI 3980
PvuII 4216
EcoRV 4511
SalI 4721
EcoRI 4733
PvuII 4988
NcoI 5314
EcoRI 5723
SmaI 5730
XhoI 6872
PvuI 6882
DraI 7334
PvuI 7418
XhoI 7863
SmaI 8027
EcoRV 8058
EcoRV 8230
EcoRV 8520
PvuI 9170
EcoRV 9369
BglII 9500
SalI 9621
PvuI 9586
XhoI 9556
NcoI 10314
EcoRV 10258
PvuII 10408
PvuI 10657
EcoRI 10797
EcoRI 10945
SmaI 11275
BglII 11290
SacI 11313
PvuII 11425
PvuI 11560
XhoI 12068
BglII 12679
PvuII 12951
SacI 12961
DraI 13080
PvuI 13235
XhoI 13666
PvuI 14309
SacI 14881
ClaI 14881
EcoRV 14895
SacI 14993
BglII 16546
EcoRV 16742
SacI 19019
RB
polylinker
d35S
Turbo polylinker
ATPT8
Turbo polylinker
tml 3'
polylinker
35S promoter
Tn5 kan gene
tml 3'
LB
aadA
aacC1
Spc/Str
pCGN10826
19042 bp

Figure 20

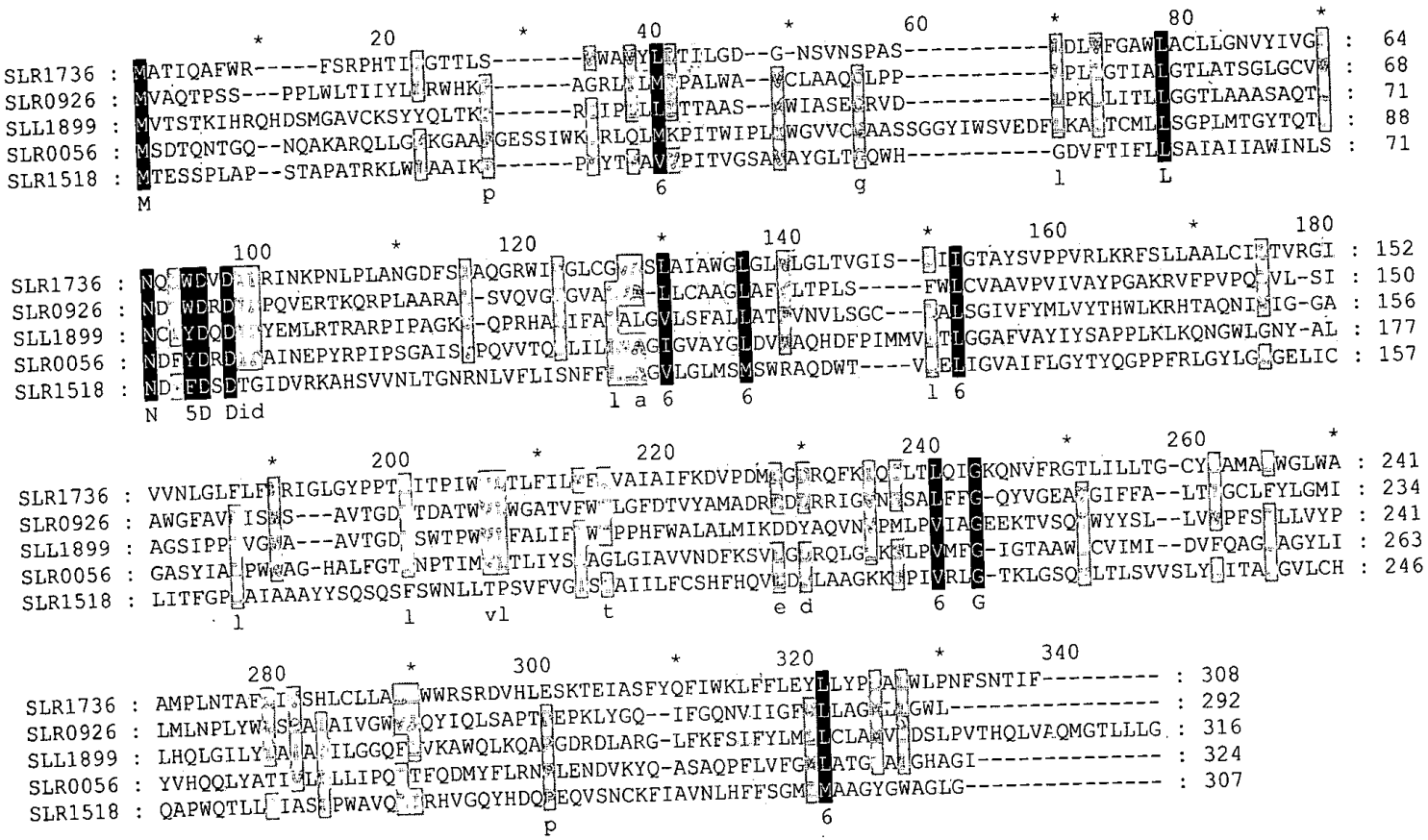


Figure 21

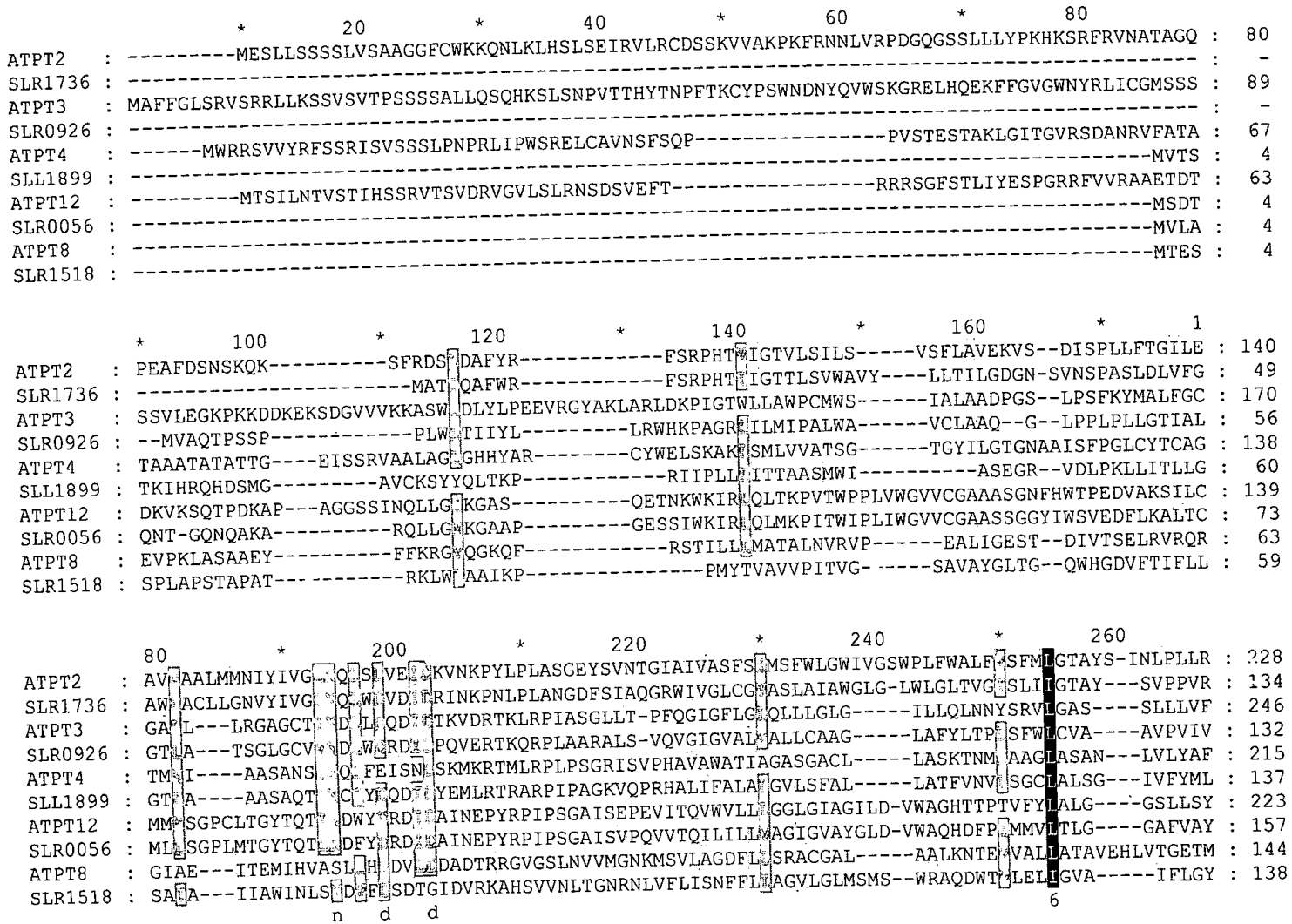


Figure 22 1/2

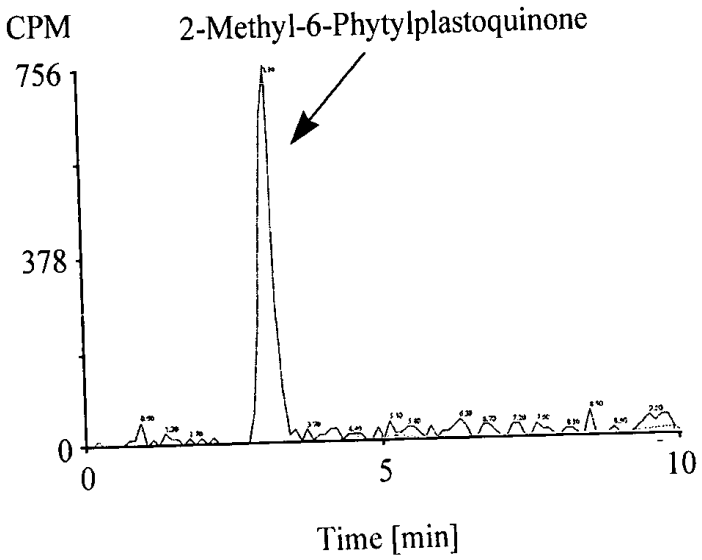
```
         *        280         *        300         *        320         *        340         *
ATPT2   : WKR-FALVAAMCILAGRAIIVQIAFYLH-IQTHVFGRPIPFTRPLGFATAFMSFFSNVIALFKDIPDIEGDKI-FGIRSFSVTLG-QKR : 313
SLR1736 : LKR-FSLLAALCILTGRGIVVNLGLFLF-FRIGLGYPPTPITPIWG-LTLFILVFTNAIAIFKDVPDMEGDRQ-FKIQSLTVQIG-KQN : 218
ATPT3   : SYP-LMKRFTFWPQAFLGLTINWGALLG--WT--AVKGSPAPSIVGPLYLSGVCWTNVYDTIYAHQDKEDDVK-VGVKSTALRFG-DNT : 328
SLR0926 : AYP-GAKRVFPVPQLGLSIAWGFAVLIS--WS--AVTGDPTDATWG-LWGATVFWTNGFDTVYAMADREDDRR-IGVNSSALFFG-QYV : 213
ATPT4   : VYT-PLKQLHPINTWGGAVVGAIPPLLG--WA--AASGQPSYNSMG-LPAALYFWQNPHFMALAHLCRNDYAA-GGYKMLSLFDP---S : 294
SLL1899 : VYTHWLKRHTAQNIVGGGAAGSIPPLVG--WA--AVTGDPSWTPWG-LFALIFLWTPPHFWALALMIKDDYAQ-VNVPMLPVIAGEEKT : 220
ATPT12  : IYS-APPLKLKQNGWGGNFALGASYLSLPWWAGQALFGTPTPDVVG-LTLLYSIAGNGIAIVNDFKSVEGDRA-LGLQSLPVAFG-TET : 308
SLR0056 : IYS-APPLKLKQNGWGGNYALGASYLALPWWAGHALFGTPNPTIMG-LTLIYSLAGNGIAVVNDFKSVEGDRQ-LGLKSLPVMFG-IGT : 242
ATPT8   : EITSSTEQRYSMDYYGQKTYYKTASLISNSCKAVAVLTGQTAEVAGLAFEYGRNLGNAFQLIDDILDFTGTSASLGKGSLSDIRH--GV : 231
SLR1518 : TYQGPPFRLGYLGLGELICLITFGPLAI-AAAYYSQSQSFSWNLLT-PSVFVGISTAIILFCSHFHQVEDDLA-AGKKSPIVRLG-TKL : 223
                                                                                  g          g

       360         *        380         *        400         *        420         *        440
ATPT2   : VFWTCVTLGQMAYAVAILVGATSPFIWSKVISVVGHVILATTGWARAKSVDLSSKTEITS---CYMFIWKLFYAEYLLLPFLK------ : 393
SLR1736 : VFRGTLILGTGCYLAMAIWGLWAAMPLNTAFLIVSHLCLLALGWWRSRDVHLESKTEIAS---FYQFIWKLFFLEYLLYPGALWLPNFS : 304
ATPT3   : KLWLTGFGTASIGFLALSGFSADLGWQYYASLAAASGQLGWQGGTADLSSGADCS---------RKFVSNKWFGAIIFSGGVLGRSFQ- : 407
SLR0926 : GEAVGIFFALTIGCLFYLGMILMLNPLYWLSLAIAI--VGWVGQYIQLSAPTPEP-KLY----GQIFGQNVIIGFVLLAGGLLGWL--- : 292
ATPT4   : GKRIAAVAGRNCFYMIPLGFIAYDWGLTSSWFCLESTLLTLAGAATAFSFYRDRTMHKA----RKMFHASLLFLPVFMSGGLLHRVSND : 379
SLL1899 : VSQIWYYSGLVVPFSLLLVYPLHQLGILYLAIAIIL--GGQFGVKAWQLKQAPGDRDLA----RGLFKFSIFYLMLLCLAGVIDSLPVT : 303
ATPT12  : AKWICVGAGDITQLSVAGYLLASGKPYYALALVALI--IPQIGFQFKYFLKDPVKYDVK----YQASAQPFLVLGIFVTAGASQH---- : 387
SLR0056 : AAWICVIMGDVFQAGIAGYLIYVHQQLYATIVLLLL--IPQITFQDMYFLRNPLENDVK----YQASAQPFLVFGMLATGGALGHAGI- : 324
ATPT8   : ITAPILFAGEEFPQLREVVDQVEKDPRNVDIALEYLGKSKGIQRARELAMEHANLAAAAIGSLPETDNEDVKRSRRALIDGTHRVITRN : 320
SLR1518 : GSQVLTLSGVSLYLITAIGVLCHQAPWQTLL.IASLPWAVQLGRHVGQYHDQPEQVSNCK---FIAVNLHFFSGMLMA/.GYGWAGLG-- : 307

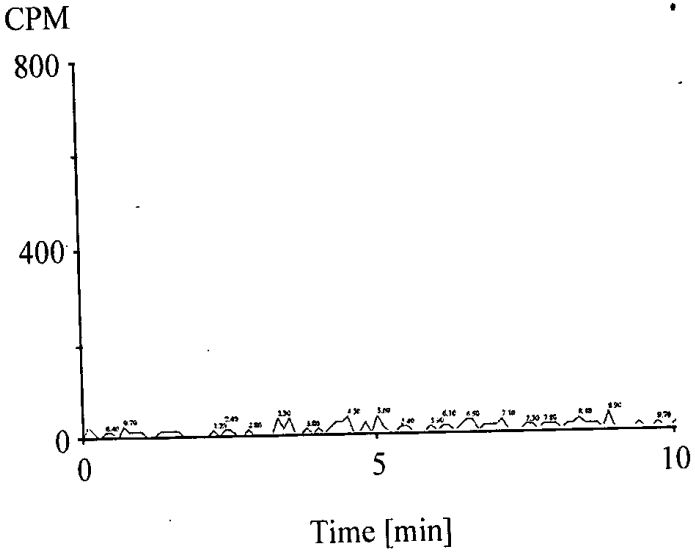
          *        460         *        480         *
ATPT2   : ------------------------------------------------ :   -
SLR1736 : NTIF-------------------------------------------- : 308
ATPT3   : ------------------------------------------------ :   -
SLR0926 : ------------------------------------------------ :   -
ATPT4   : NQQQLVEEAGLTNSVSGEVKTQRRKKRVAQPPVAYASAAPFPFLPAPSFYSP : 431
SLL1899 : --HQLVAQMGTLLLG--------------------------------- : 316
ATPT12  : ------------------------------------------------ :   -
SLR0056 : ------------------------------------------------ : 321
ATPT8   : K----------------------------------------------- :   -
SLR1518 : ------------------------------------------------ :   -
```

Figure 22 2/2

09699069 .101400



Synechocystis 6803 wild type



Synechocystis slr1736 knockout

Figure 23

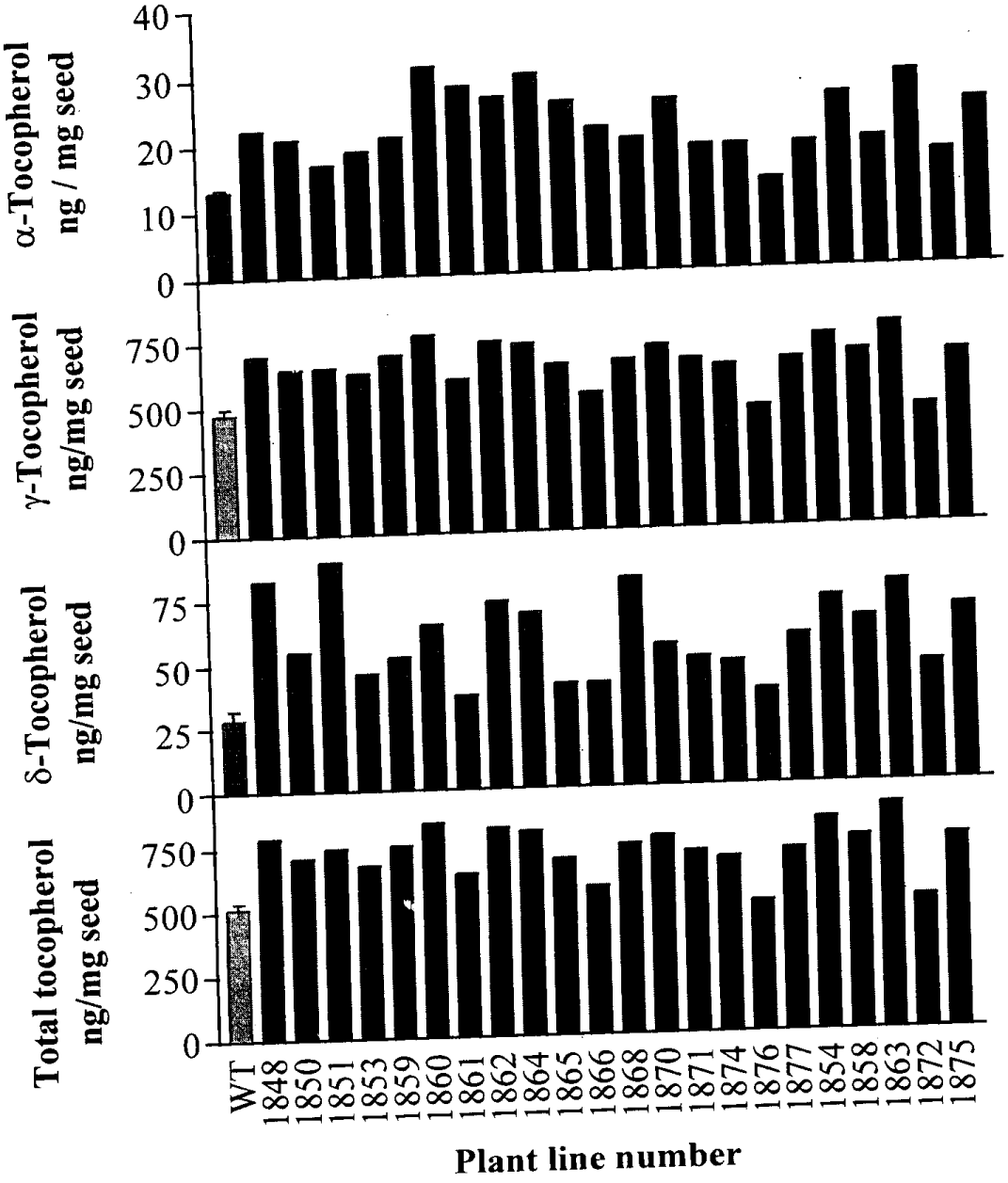

α-Tocopherol ng / mg seed
40
30
20
10
0
γ-Tocopherol ng/mg seed
750
500
250
0
δ-Tocopherol ng/mg seed
75
50
25
0
Total tocopherol ng/mg seed
750
500
250
0
WT
1848
1850
1851
1853
1859
1860
1861
1862
1864
1865
1866
1868
1870
1871
1874
1876
1877
1854
1858
1863
1872
1875
Plant line number

Figure 24

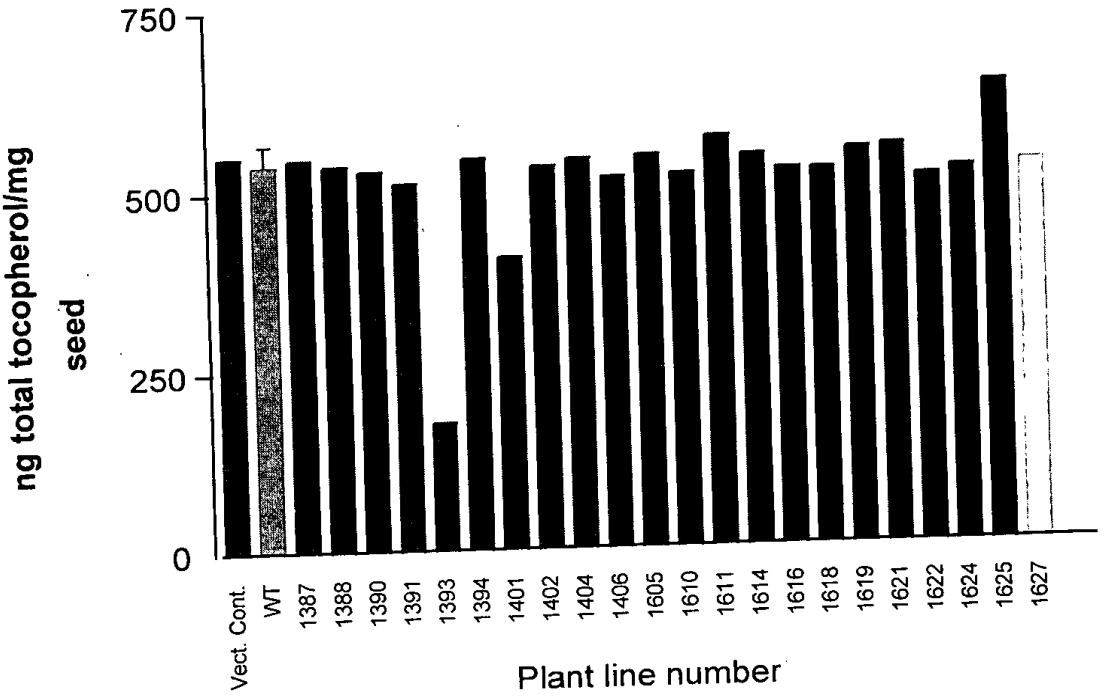

750
500
250
0
ng total tocopherol/mg seed
Vect. Cont.
WT
1387
1388
1390
1391
1393
1394
1401
1402
1404
1406
1605
1610
1611
1614
1616
1618
1619
1621
1622
1624
1625
1627
Plant line number

Figure 25

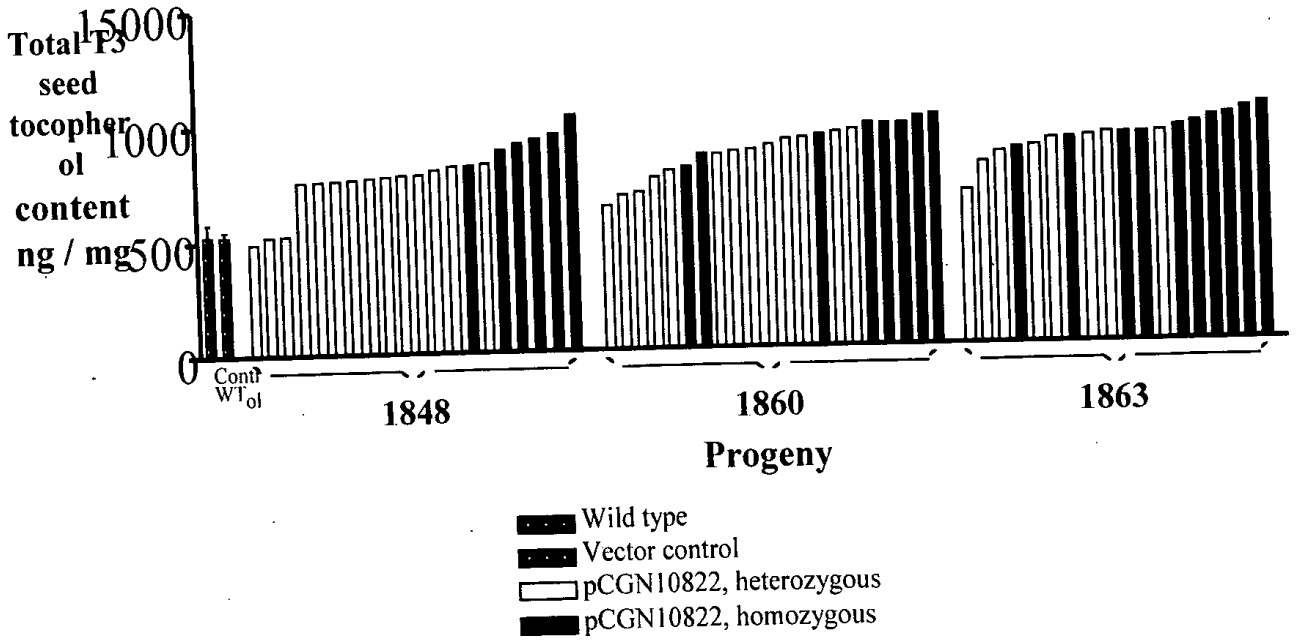

Total T3 seed tocopherol content ng / mg
15000
1000
500
0
Contr WT ol
1848
1860
1863
Progeny
Wild type
Vector control
pCGN10822, heterozygous
pCGN10822, homozygous

Figure 26

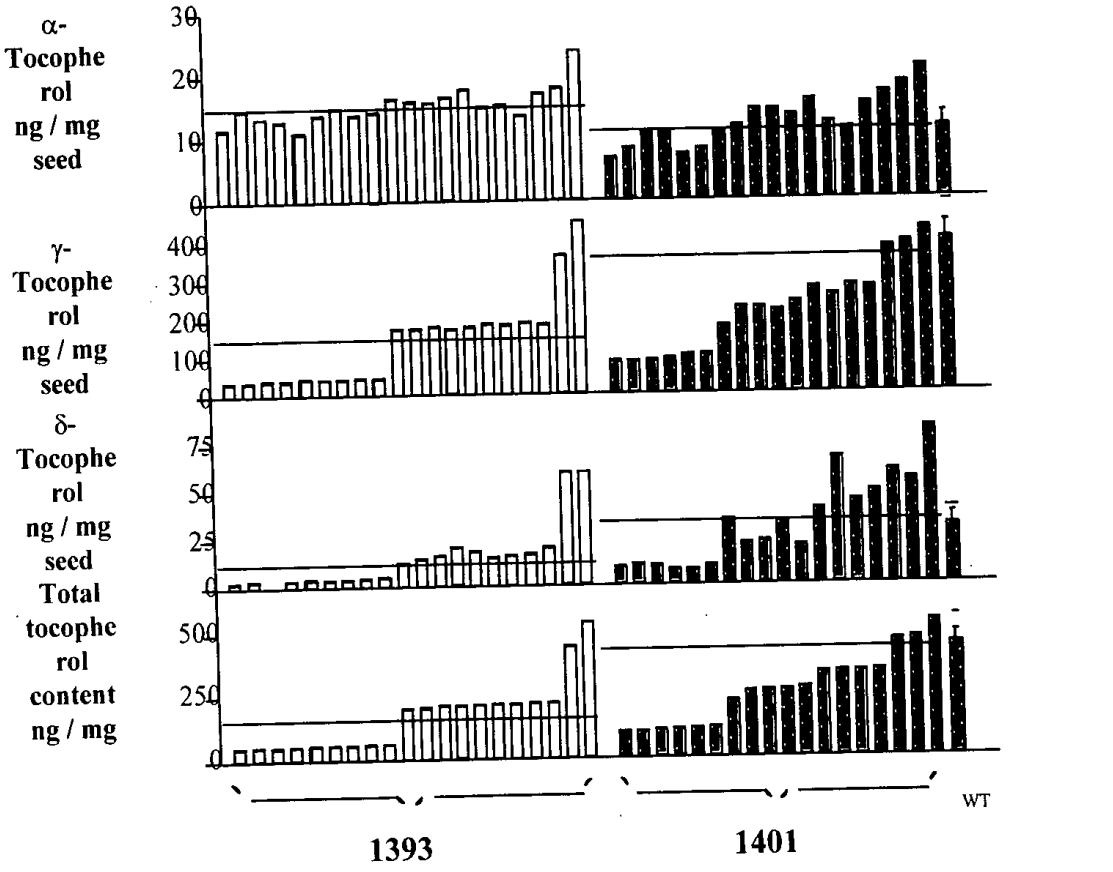


Figure 27

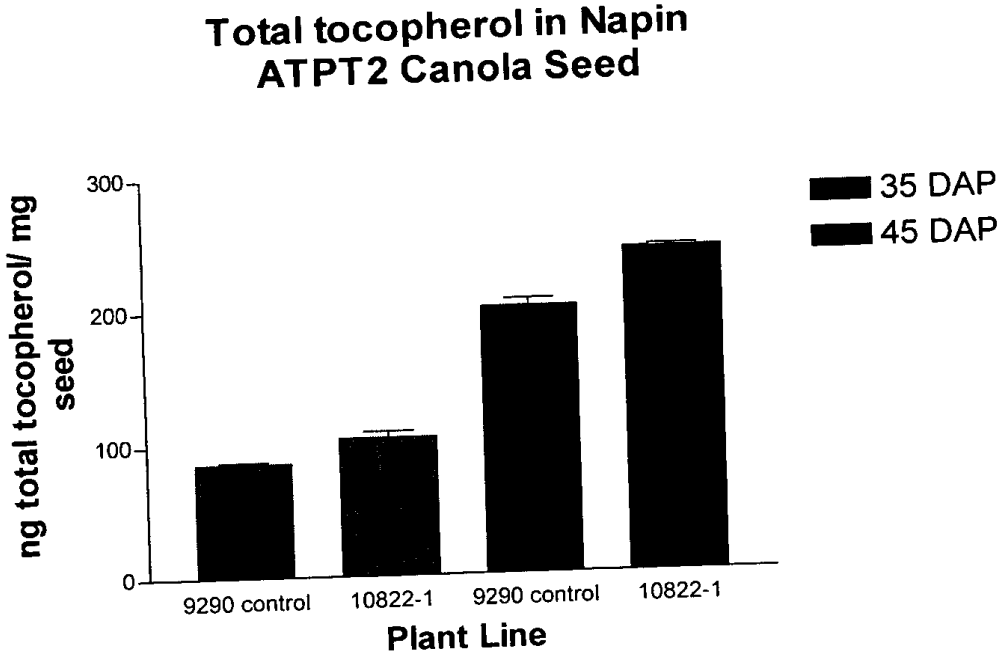


Figure 28

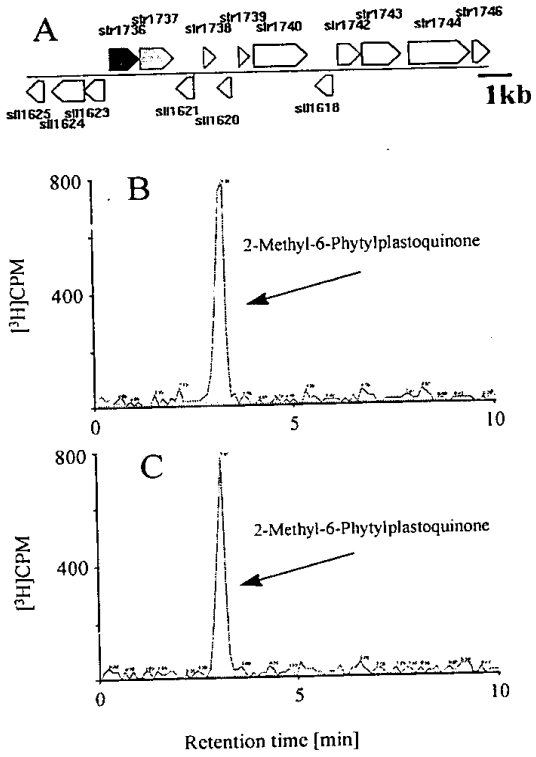

A
slr1736
slr1737
slr1738
slr1739
slr1740
slr1742
slr1743
slr1744
slr1746
1kb
sll1625
sll1624
sll1623
sll1621
sll1620
sll1618
B
800
400
[3H]CPM
2-Methyl-6-Phytylplastoquinone
0
5
10
C
800
400
[3H]CPM
2-Methyl-6-Phytylplastoquinone
0
5
10
Retention time [min]

Figure 29

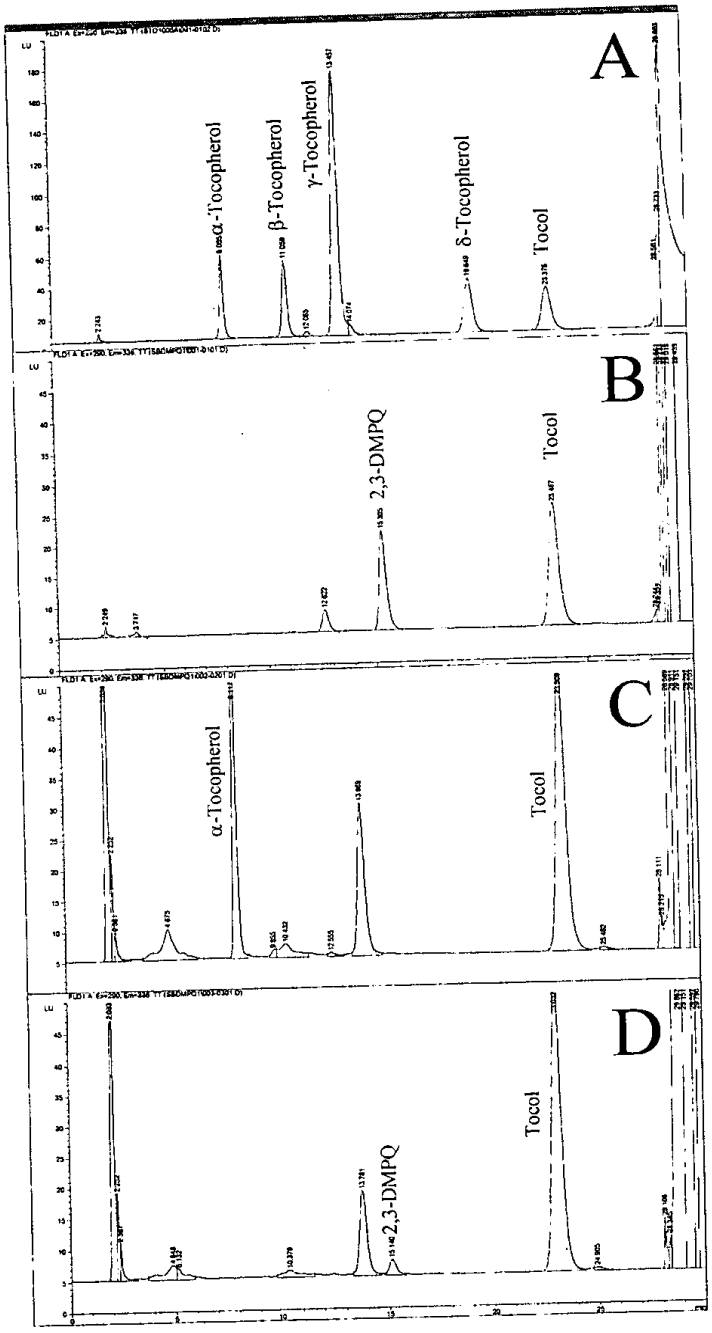

A
α-Tocopherol
β-Tocopherol
γ-Tocopherol
δ-Tocopherol
Tocol
B
2,3-DMPQ
Tocol
C
α-Tocopherol
Tocol
D
2,3-DMPQ
Tocol

Figure 30

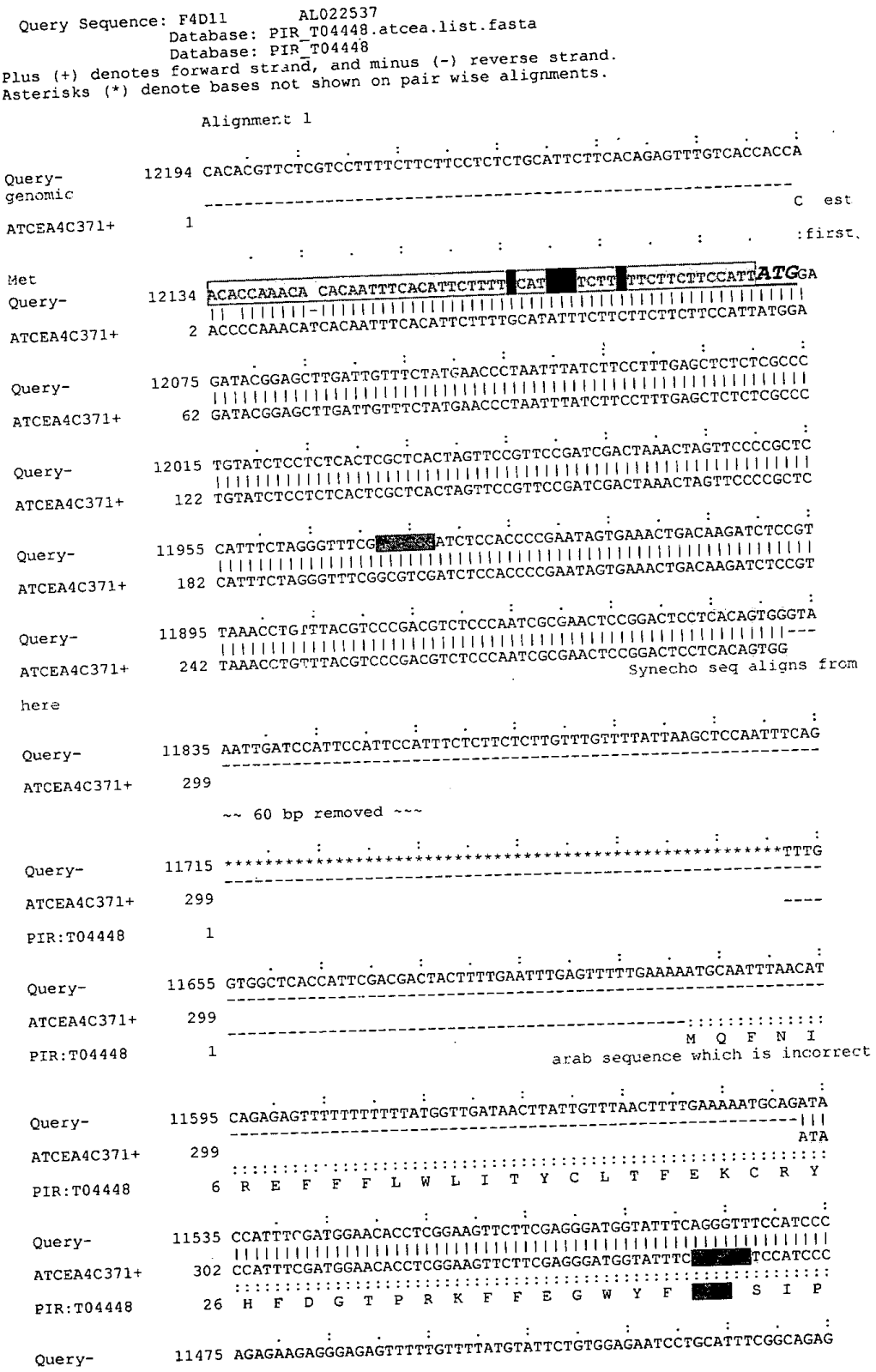

Query Sequence: F4D11 AL022537
Database: PIR_T04448.atcea.list.fasta
Database: PIR_T04448
Plus (+) denotes forward strand, and minus (-) reverse strand.
Asterisks (*) denote bases not shown on pair wise alignments.
Alignment 1
Query-genomic
ATCEA4C371+
Met
PIR:T04448
~~ 60 bp removed ~~~
Synecho seq aligns from here
arab sequence which is incorrect

Figure 31
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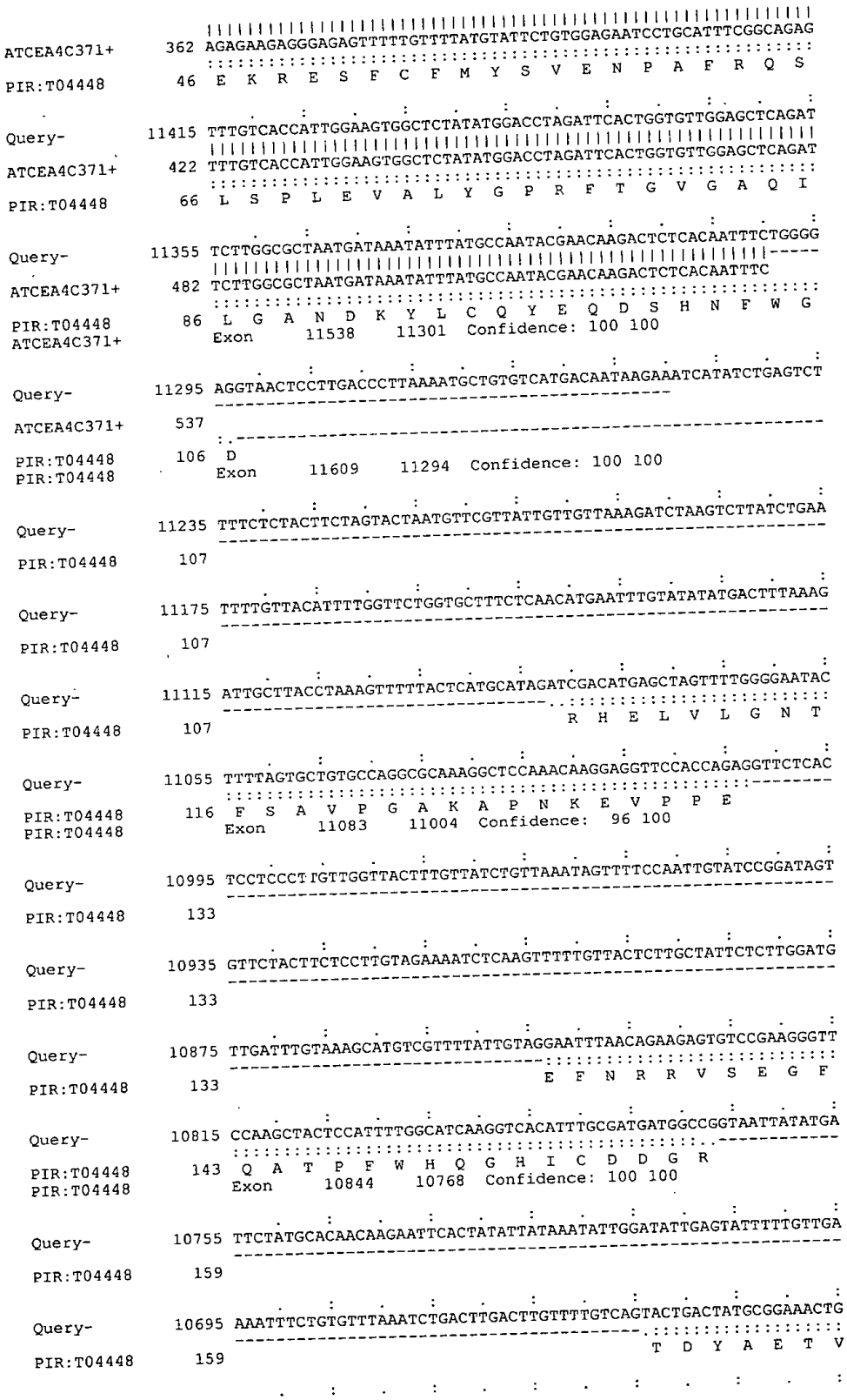
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Figure 31
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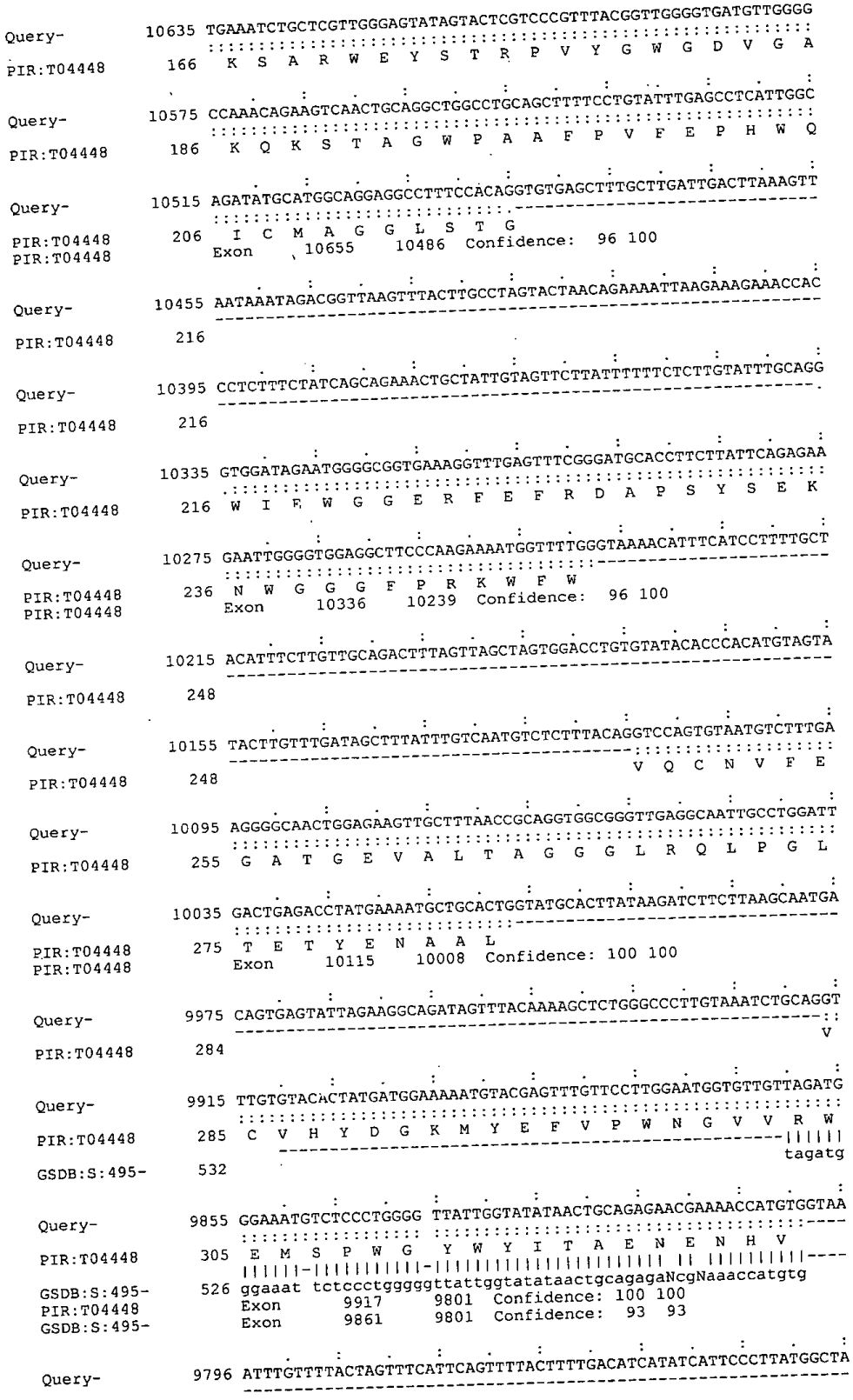
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Figure 31
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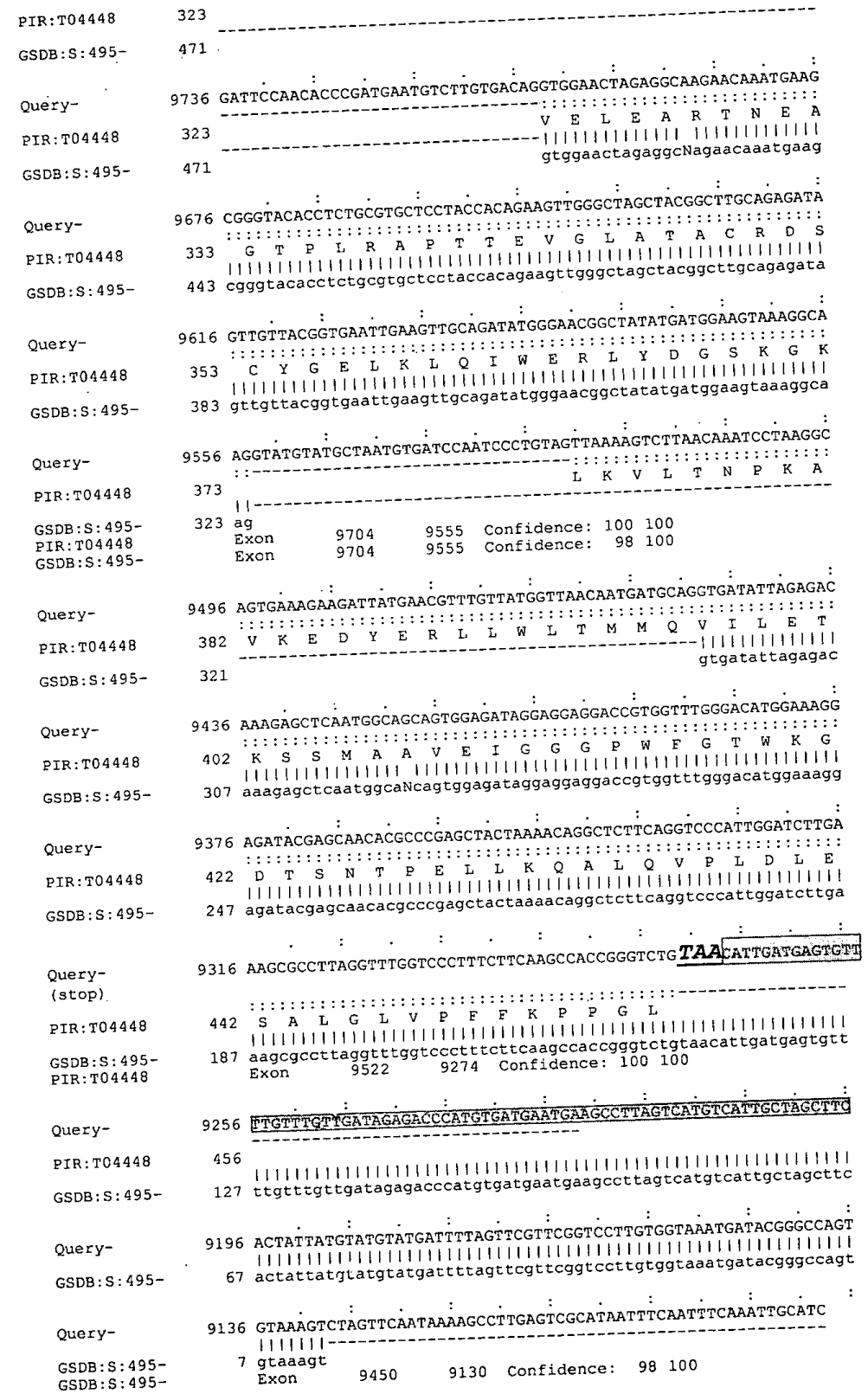
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GSDB:S:495-
Exon 9450 9130 Confidence: 98 100

Figure 31
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ATCEA4C37145_1 3063693/emb|CAA18584.1| 4.0e-43 (AL022537) putative protein [Arabidopsis thaliana]

PIR:T04448 sPIR-T04448 shypothetical protein F4D11.30 - Arabidopsis thaliana; g3063693|emb|CAA18584.1 (AL022537) putative protein [Arabidopsis thaliana]_F4D11.30

GSDB:S:4955486|AI995392|AI995392|701673779 A. thaliana, Columbia Col-0, inflorescence-1 Arabidopsis thaliana cDNA clone 701673779, mRNA sequence.

Figure 31
5/5

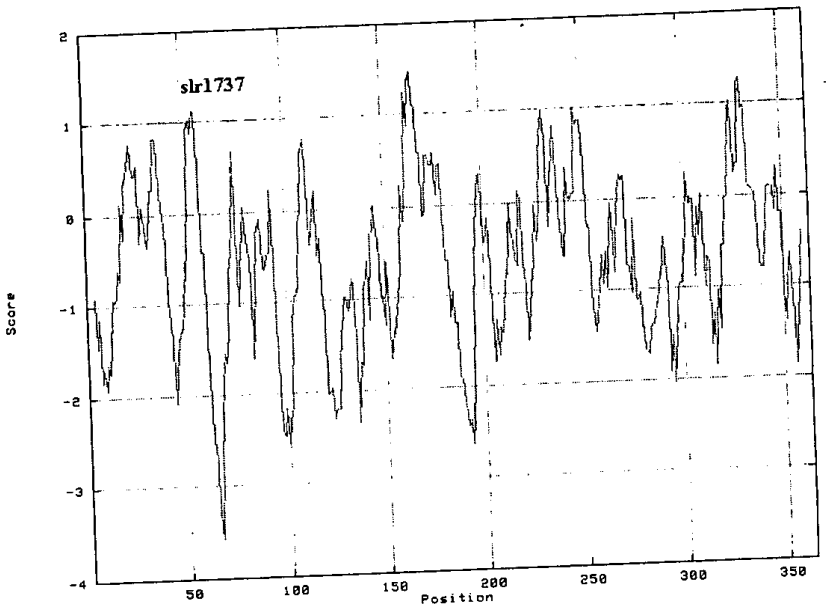

Figure 32

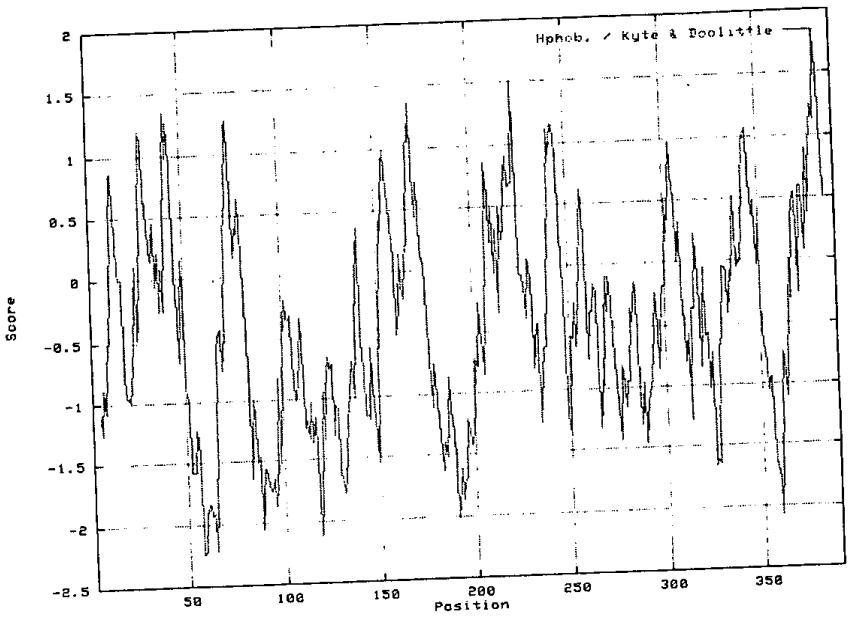
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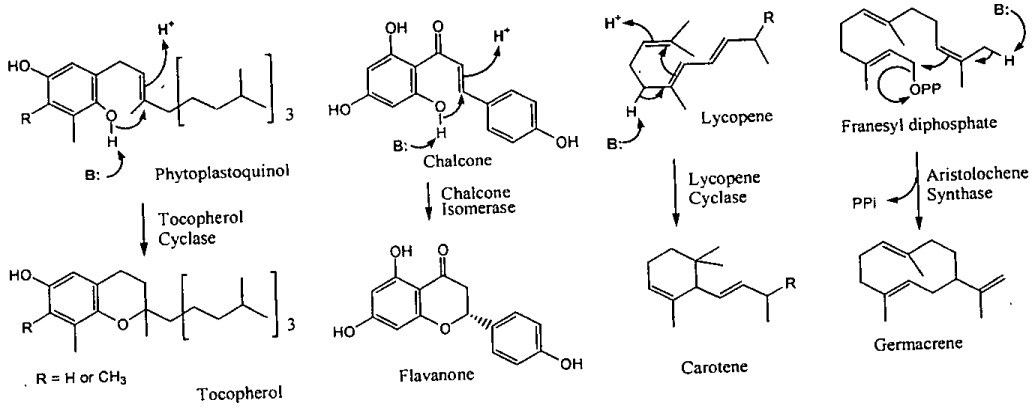
Figure 33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Chalcone Isomerase
Flavanone
R
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Carotene
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Franesyl diphosphate
PPi
Aristolochene Synthase
Germacrene

Figure 34

```
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Figure 35